SOFTWARE CONFIGURATION MANAGEMENT (SCM)
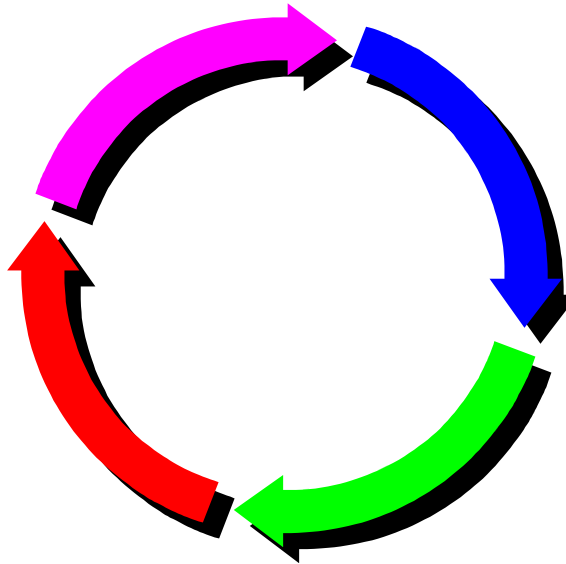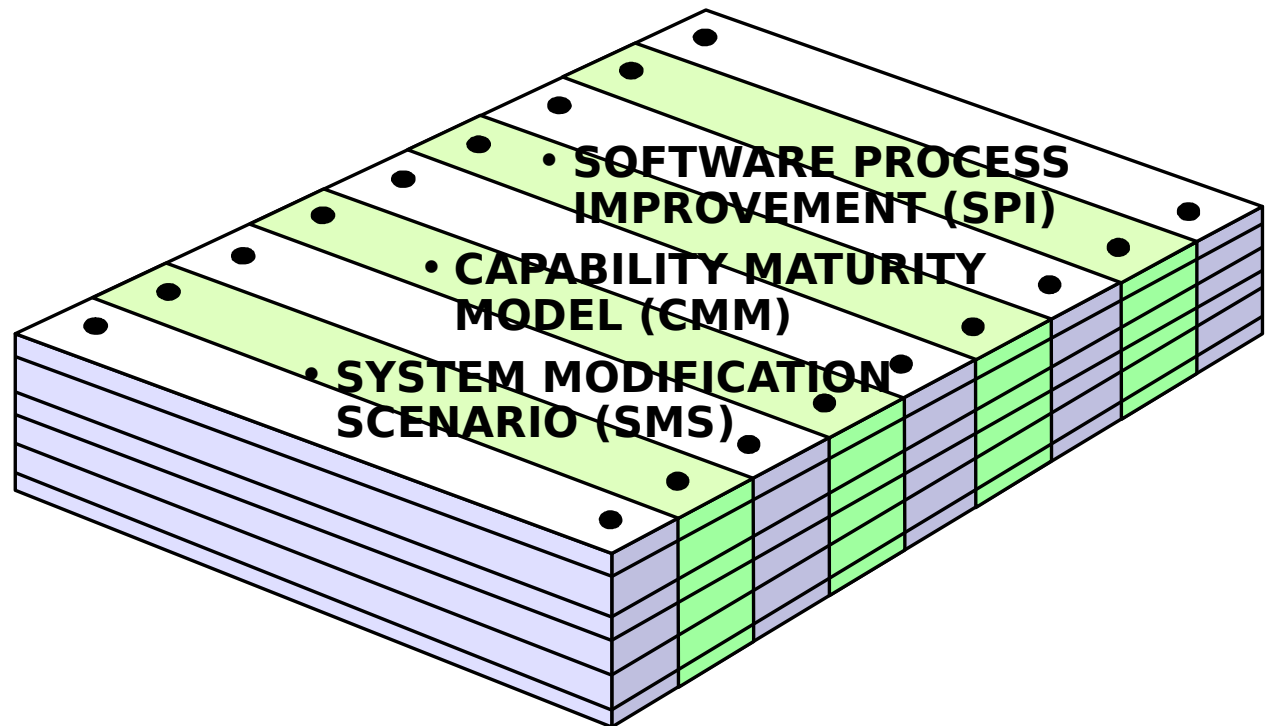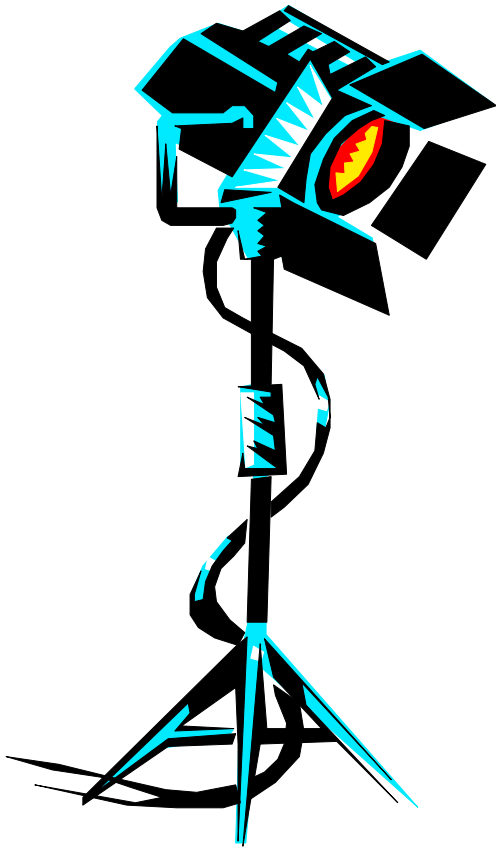
Defense Finance and Accounting Service (DFAS)
Financial Systems Activity (FSA)
Indianapolis, IN
Sofware Quality Assurance

Welcome to the
Software
Configuration
Management
Training Class

SECTION 1

- SOFTWARE PROCESS IMPROVEMENT (SPI)
- CAPABILITY MATURITY MODEL (CMM)
- SYSTEM MODIFICATION SCENARIO (SMS)

Software Process Improvement (SPI)

R e v i e w

SPI IS

- – **PROCESS TO IMPROVE SOFTWARE**

- – **DEVELOPED BY SEI**

- – **IDENTIFIES STEPS PRODUCT MUST GO THROUGH**

- – **APPLICABLE THROUGHOUT SOFTWARE LIFE CYCLE**

SEI

Capability Maturity Model (CMM)

R e v i e w

The CMM - FRAMEWORK FOR SOFTWARE IMPROVEMENT PROCEDURES

Identifies

- **Maturity Levels**
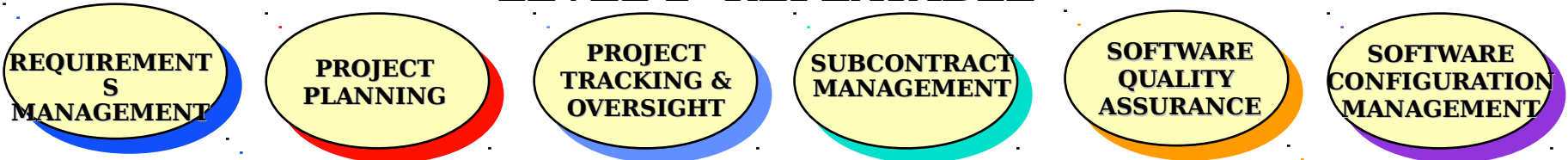- **Key Process Areas**
- **Key Elements**

SEI

KEY PROCESS AREAS (KPAs)
As Defined by
SOFTWARE ENGINEERING INSTITUTE (SEI)

"SOFTWARE ENGINEERING AND MANAGEMENT PRACTICES"

LEVEL 1 - INITIAL

LEVEL 2 -REPEATABLE

- REQUIREMENTS MANAGEMENT
- PROJECT PLANNING
- PROJECT TRACKING & OVERSIGHT
- SUBCONTRACT MANAGEMENT
- SOFTWARE QUALITY ASSURANCE
- SOFTWARE CONFIGURATION MANAGEMENT

LEVEL 3 - DEFINED

- ORGANIZATION PROCESS FOCUS
- ORGANIZATION PROCESS DEFINITION
- TRAINING PROGRAM
- INTEGRATED SOFTWARE MANAGEMENT
- SOFTWARE PRODUCT ENGINEERING
- INTERGROUP COORDINATION
- PEER REVIEWS

LEVEL 4 - MANAGED

- PROCESS MEASUREMENT & ANALYSIS
- QUALITY MANAGEMENT

LEVEL 5 - OPTIMIZING

- DEFECT PREVENTION
- TECHNOLOGY INNOVATION
- PROCESS CHANGE MANAGEMENT

# System Modification Scenario (SMS)

R e v i e w

The SMS is:

> **A part of the Software Process Architecture, that provides process definition, description and documentation of how work is accomplished during routine system modification and/or enhancement.**

SOFTWARE PROCESS ARCHITECTURE

SYSTEM MODIFICATION SCENARIO - PHASES & SUBPHASES

CHANGE INITIATION

CHANGE/ PROBLEM DEFINITION	PROBLEM (PTR) DOCUMENTATION & DISPOSITION	CHANGE (SCR) INITIATION, REVIEW, APPROVAL, & RANKING

CHANGE DEFINITION

FUNCTIONAL REQ'MENTS DEFINITION

CHANGE ANALYSIS

ANALYSIS PREPARATION	REQUIREMENTS SPECIFICATION & IMPACT ANALYSIS

CHANGE ANALYSIS (Contd.)

DESIGN PREPARATION	SYSTEM/ SUBSYSTEM DESIGN	RESOURCE ESTIMATION

CHANGE APPROVAL & PLANNING

PROPOSED RELEASE PACKAGE DEVELOPMENT	RELEASE PLANNING ITSA PREP & ACCEPTANCE	RELEASE PLANNING	CCB REVIEW & APPROVAL	DEVELOPMENT ITSA PREP. & ACCEPTANCE

CHANGE DEVELOPMENT

Release Planning	SYSTEM DOCUMENTATION MODIFICATION	DETAILED SAT DEFINITION	DETAILED SQT DEFINITION	System/Subsystem Design & COMPUTER SOFTWARE UNIT SPECIFICATIONS DEVELOPMENT	DETAILED SIT DEFINITION	DETAILED UT DEFINITION	UNIT CODE & UNIT TEST(UT)

Legend

Software Engineer NON LEVEL 2	Software Engineer & Customer NON LEVEL 2	Customer LEVEL 2 & NON-LEVEL 2	Optional At This Point
Software Engineer LEVEL 2	Software Engineer & Customer LEVEL 2		Optional if already Performed

CHANGE DEVELOPMENT (Contd.)

SIT EXECUTION & CERTIFICATION	SQT EXECUTION & CERTIFICATION	SAT EXECUTION & CERTIFICATION

CHANGE IMPLEMENTATION

| RELEASE IMPLEMEN- TATION	POST RELEASE IMPLEMEN- TATION

SECTION 2

- **Software Configuration Management (SCM)**
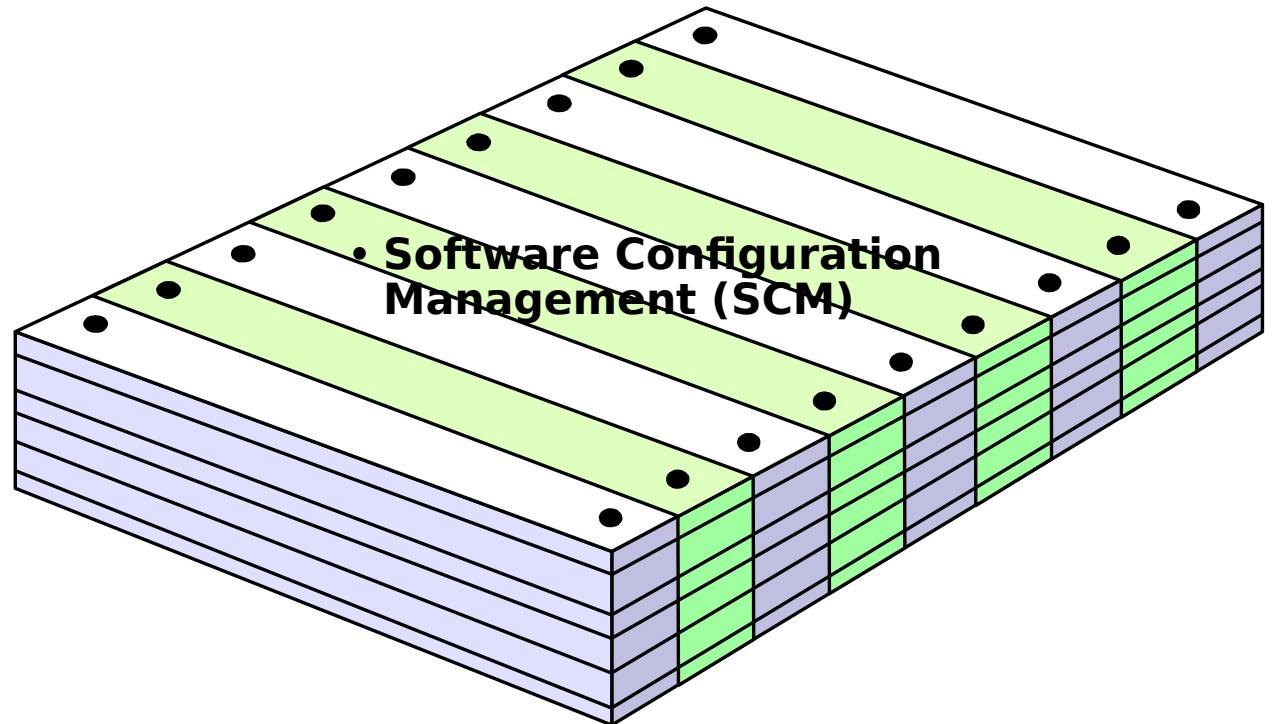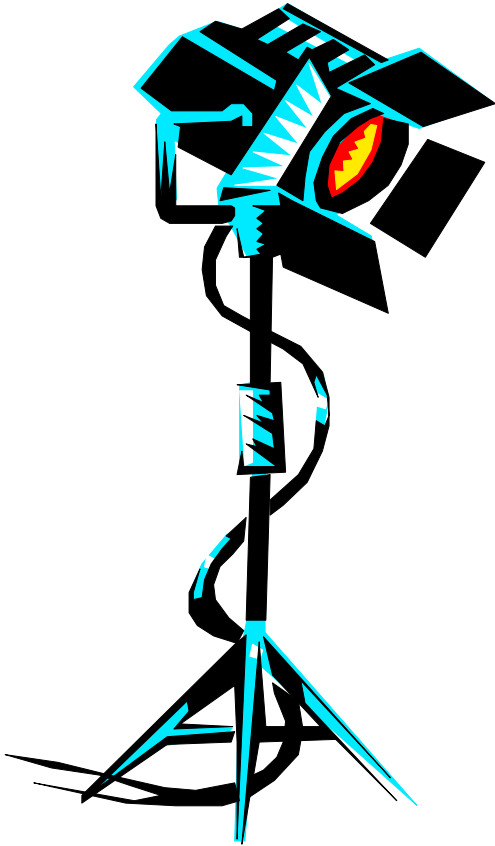
Software Configuration Management

**Purpose: To establish and maintain the integrity or software products through the project's life cycle.
-CMM**

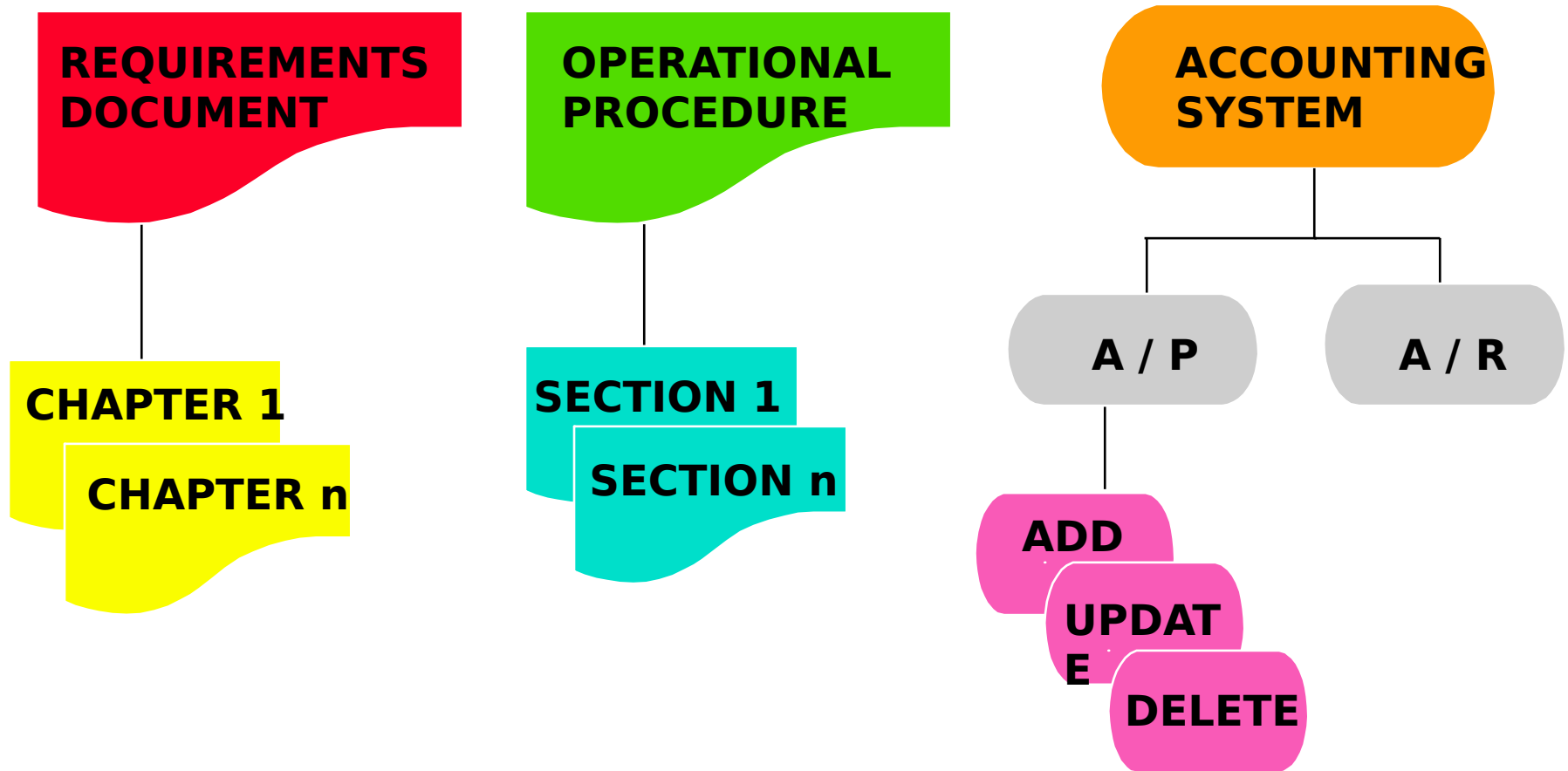# What are the major functions of Configuration Management (CM)?

IDENTIFICATION

CONTROL

STATUS ACCOUNTING

AUDIT
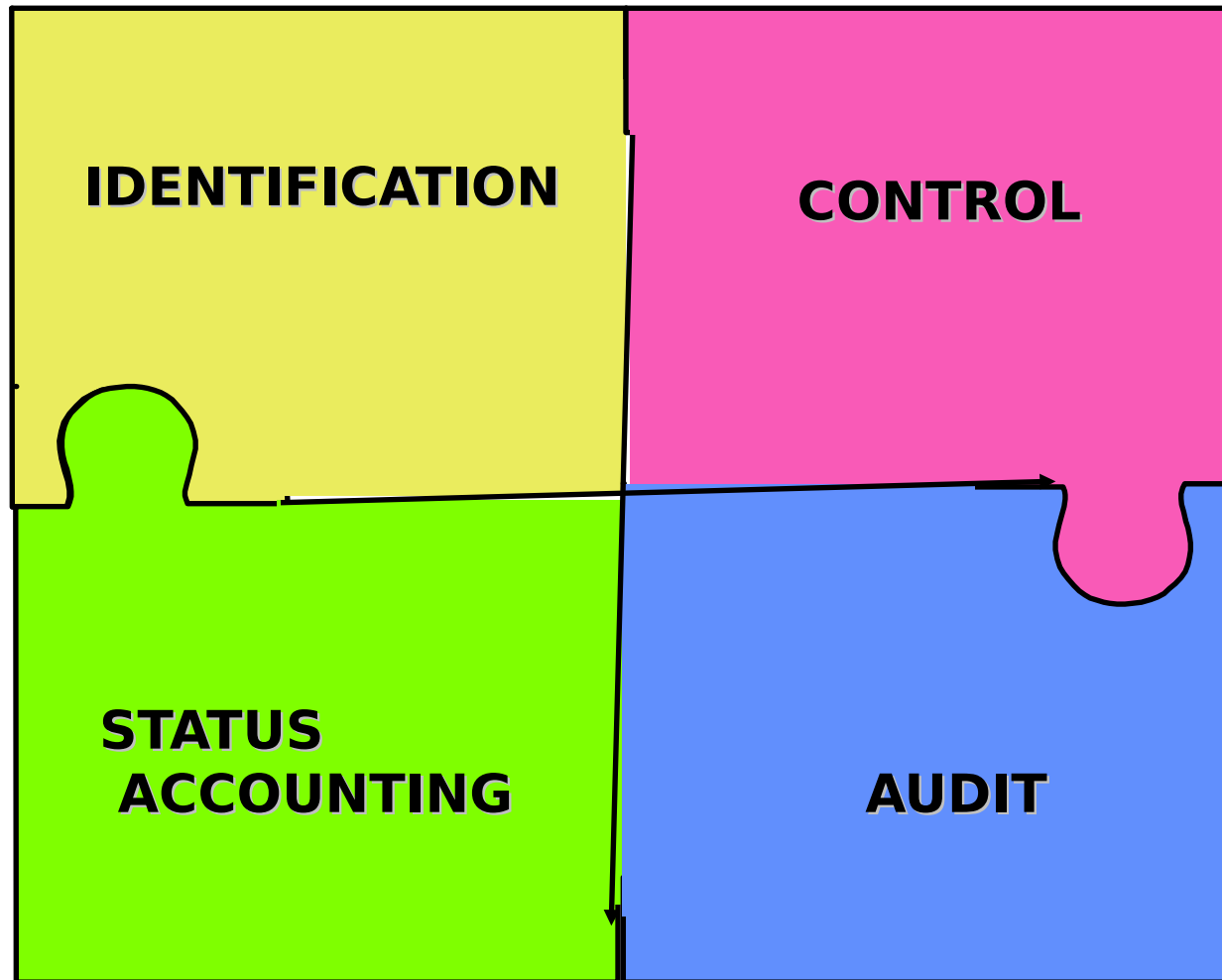
Configuration Identification

IDENTIFICATION

The first function of CM:

- **Identify Configuration Items (CIs) for an AIS**

- **Document Functional and Physical Characteristics**

Configuration Items (CI)

REQUIREMENTS DOCUMENT

OPERATIONAL PROCEDURE

ACCOUNTING SYSTEM

CHAPTER 1

CHAPTER n

SECTION 1

SECTION n

A / P

A / R

ADD

UPDATE

DELETE

Configuration Control

Second Function of Configuration Management

CONTROL

- **Configuration Control consists of:**

  – **Change Evaluation**

  – **Change Coordination**

  – **Change Approval or disapproval**

  – **Change Implementation**
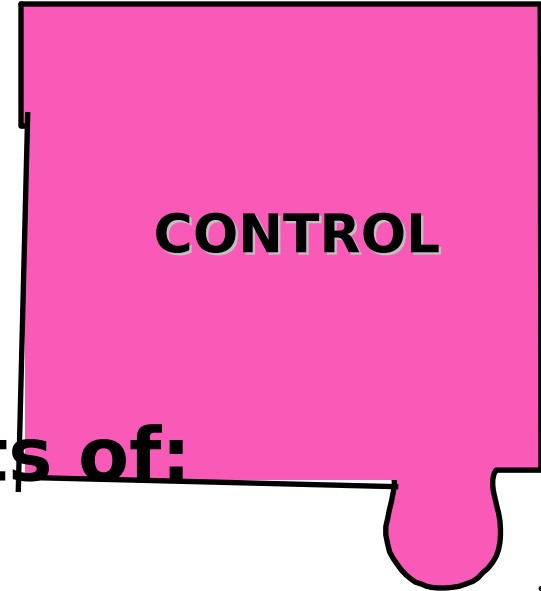
Configuration Status Accounting

Third Function of Configuration Management

- **Tracks SCR Status to include:**
  - **Proposed changes (Formal SCRs)**
  - **Waivers and deviations to configuration (Emergency SCRs)**
  - **Implementation of approved changes**

STATUS ACCOUNTING

Configuration Status Accounting

- **Status recording should be built into the change control process and used to generate status accounting reports**

- **Procedures and frequency of status reporting shall be documented in SCM Plan**

- **Configuration Status Accounting Reports (CSAR) are useful to management, reviewers and auditors**

Configuration Status Accounting Records

- **DFAS 8000.1-R Requires Status Accounting of:**

  - Systems Change Requests and Functional Descriptions

  - Delegations of authority

  - CCB Minutes

  - Records of releases (schedule and content)

  - A matrix of commitments

  - ITSAs

  - MIPR

- **These records must be retained in controlled repository**

Configuration Audit
Fourth Function of Configuration Management

- **Verifies SCR**

- **Verifies each CI conforms to required specifications**

- **Types of Audit**
  - **Configuration**
    - » **Functional Configurat**
    - » **Physical Configuratio**
  - **Internal**
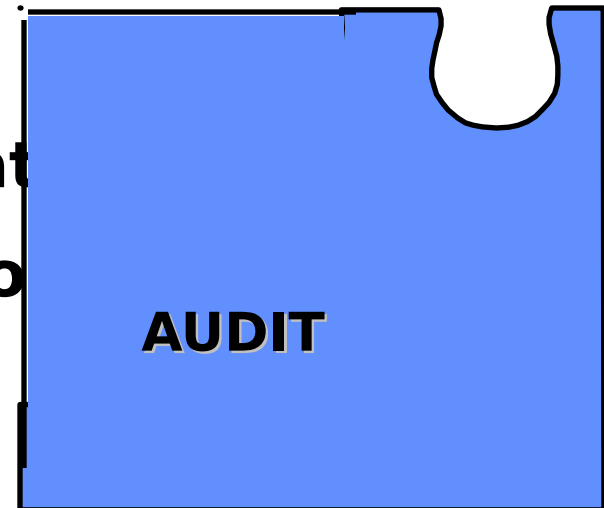
AUDIT

SCM Audits & Reviews

- **PCA   (PHYSICAL CONFIGURATIOIN AUDIT)**
  - **COMPARE PHYSICAL COMPONENTS TO MAKE SURE THAT THEY REFLECT EACH OTHER**
    - » REQUIREMENTS VS DESIGN
    - » DESIGN VS CODE...
- **FCA   (FUNCTION CONFIGURATION AUDIT)**
  - **CODE**
  - **TESTING (EXPECTED VS ACTUAL RESULTS)**
- **INTERNAL AUDITS**

CMM Goal 1

Software configuration management activities are planned.

CMM SCM
Activities to Support Goal 1

- •Prepare a SCM Plan.
- •Use the SCM Plan.

CMM Goal 2

Selected work products are identified, controlled, available.

CMM SCM
Activities to Support Goal 2

- **Use the SCM plan.**

- **Establish the CM library system.**

- **Identify the work products to be placed under CM.**

- **Create and release products from the CM library.**

CMM Goal 3

Changes to identified work products are controlled.

CMM SCM
Activities to Support Goal 3

- **Initiate, record, review, approve and track SCRs, PTRs.**

- **Control changes to baselines.**

CMM Goal 4

Affected groups and individuals are informed of baseline status and content.

CMM SCM
Activities to Support Goal 4

- **Record status of CIs.**

- **Create standard reports and provide to affected groups and individuals.**

- **Conduct baseline audits.**

CMM SCM
Commitment to Perform

Project follows a written organizational policy for SCM.

CMM SCM
Ability to Perform

- **SCCB manages software baselines.**

- **SCM group coordinates and implements SCM.**

- **Organization provides adequate resources and funding.**

- **SCM group is trained.**

- **SEG and other related groups are trained.**

CMM SCM
Measurement and Analysis

- **Measure and use results to determine the status of the SCM activities.**

CMM SCM
# Verifying Implementation

- **SCM reviews activities with Senior Management on a periodic basis.**

- **SCM reviews activities with PM on periodic and event-driven bases.**

- **SCM audits baselines periodically.**

- **SQA group reviews/audits SCM products and activities, reports the results.**

SECTION 3

DFAS Policy for
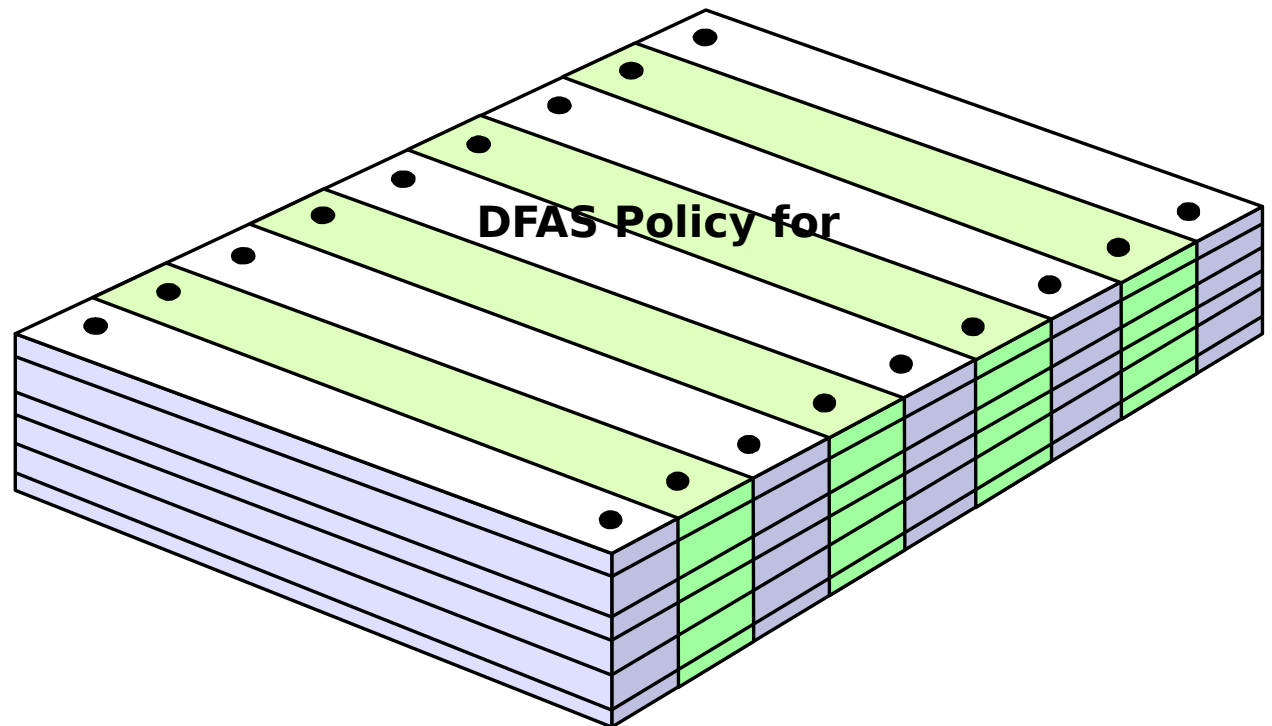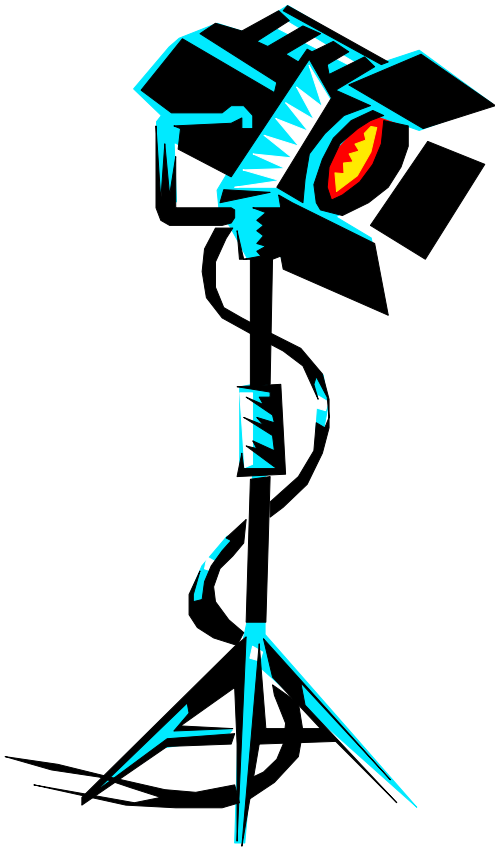
<u>DFAS</u> Regulation 8000.1-R

- **DFAS Configuration Management Policy Provides:**

  – **Configuration Management for System Change Requests**

  – **Roles of Configuration Control Boards**
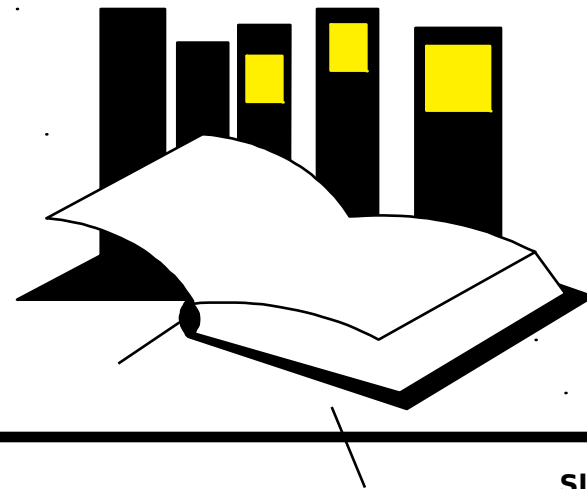
Configuration Management Policy

Purpose:

Used to establish and maintain the integrity of the work products of an Automated Information System throughout the AIS software life cycle...
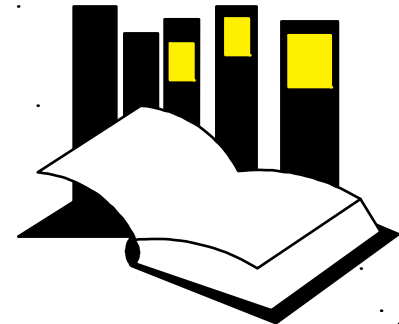
... Configuration Management Policy

- **Includes:**
  - **Background**
  - **Description**
  - **Objectives**
  - **Responsibilities**

...Configuration Management Policy

Background:

 A need arose for a policy describing the FSO Software Configuration Management program that would apply to all DFAS Financial Systems Activities.

...Configuration Management Policy

Description:

Each FSA is to implement a CM program to control all Cis, which shall address both operational and developmental configurations and support environments.

...Configuration Management Policy

Objectives:

1. Identify (CM):

- **Group and Organizational Relationships**

- **Responsibilities/Authority of Managers**

- **Plan that Addresses all Technical Data Requirements**

- **Required Directives with Appropriate Compliance Detailed**

- **Other Support Tools**

2. Use CMIS (or other approved tool)

3. Manage Problems
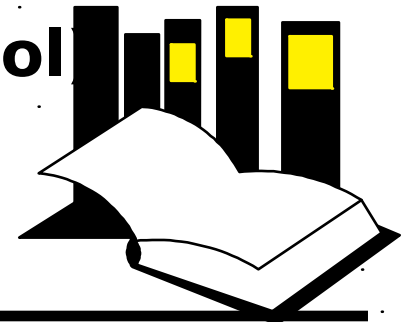
...Configuration Management Policy

Responsibilities:

- **FSO Directors:**
  - – **Establish and Publish a CM Policy**
  - – **Provide Funding Necessary**
  - – **Provide Standard CM Support and Staffing**
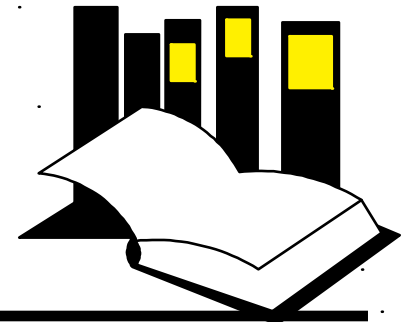
...Configuration Management Policy

Responsibilities:

- **FSA Directors:**
  - **Establish Full-Time CM Element**
  - **Ensure CM Element is Adequately Staffed**
  - **Ensure All Efforts in CM Are Managed**
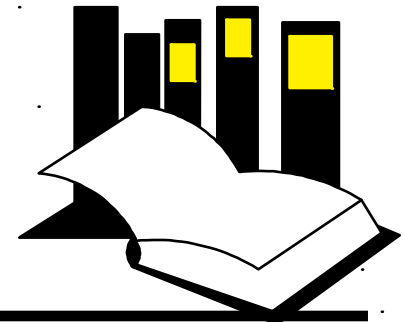
...Configuration Management Policy Release Management Distribution

Integral part of Configuration Management

- **States purpose, description, policy, and methods used to manage releases**
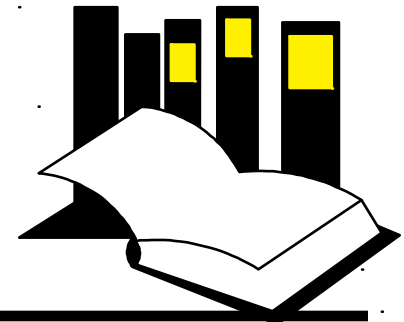
WHAT IS A *RELEASE?*

A group of SCRs which are:

- **Scheduled for production implementation**
- **Approved and funded**
- **Developed and tested**

Release Management Distribution Under Configuration Management

- **Internal to CM - Own Policy**

- **Release via Electronic Transmission**

- **Maximum 4 Releases a Year**

- **Require Minimum Operator Intervention with Detailed User Documentation**

- **Released by Responsible Release Control Group**

- **Appropriate User Notification**

- **No Source Code**

- **Check for Computer Viruses**
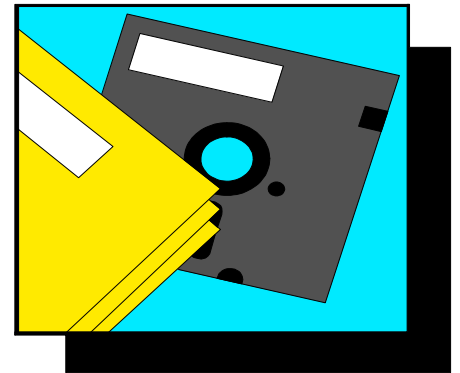
...Release Management Distribution Policy

Methods of Release:

- **Mainframe/Miniprocessors**

- **Micro Processors**

- **Floppy Disk if Absolutely Necessary**

Review

Questions ?

SCM ORGANIZATION

- ## MANAGEMENT
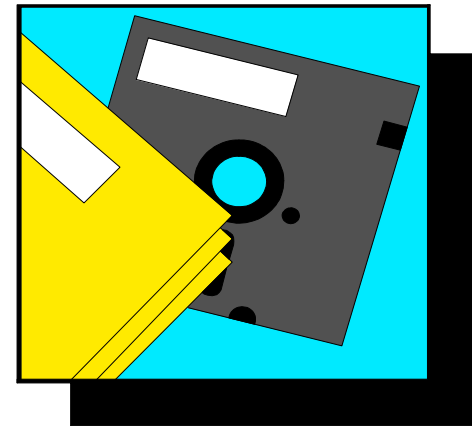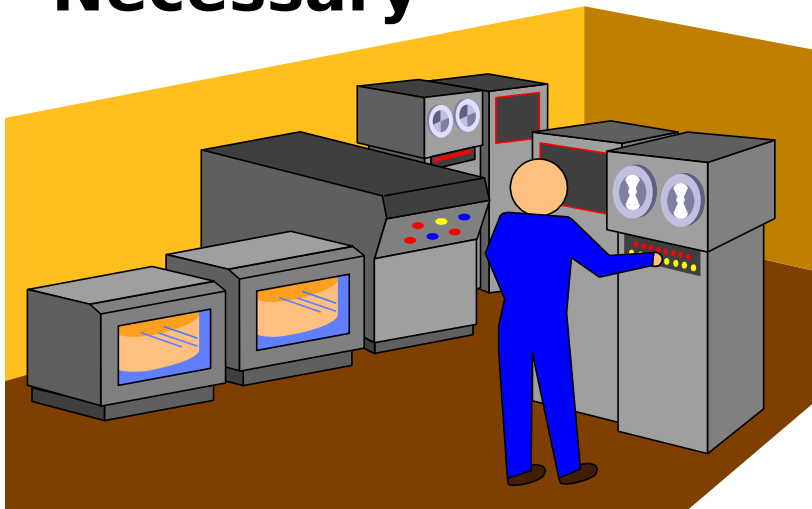
  - **Reviews, Approves, Disapproves Changes**

  - **Controls Routing Procedures and Reasons**

  - **Facilitates Liaison Between AIS and CM**

- ## CM USERS (Functional/Technical/Testers)

  - **Input Problems and Changes**

  - **Perform Analysis and Impacting on Problems/Changes**

SCM ORGANIZATION CONT.

- **HIGHER AUTHORITY**

  - **Makes Decisions on Changes that Exceed Threshold Dollar Amounts**

- **CCB**

  - **Authorizes Software Baselines**

  - **Authorizes Identification of CIs**

  - **Defines New Releases**

  - **Populates Releases**

  - **Reviews Contents of Releases**

  - **Makes Go/No Go Decisions**

SECTION 4

SMS Applied to SCM Activities

SOFTWARE PROCESS ARCHITECTURE

SYSTEM MODIFICATION SCENARIO - PHASES & SUBPHASES

CHANGE INITIATION

| CHANGE/ PROBLEM DEFINITION | PROBLEM (PTR) DOCUMENTATION & DISPOSITION | CHANGE (SCR) INITIATION, REVIEW, APPROVAL, & RANKING |

CHANGE DEFINITION

| FUNCTIONAL REQ'MENTS DEFINITION |

CHANGE ANALYSIS

| ANALYSIS PREPARATION | REQUIREMENTS SPECIFICATION & IMPACT ANALYSIS |

CHANGE ANALYSIS (Contd.)
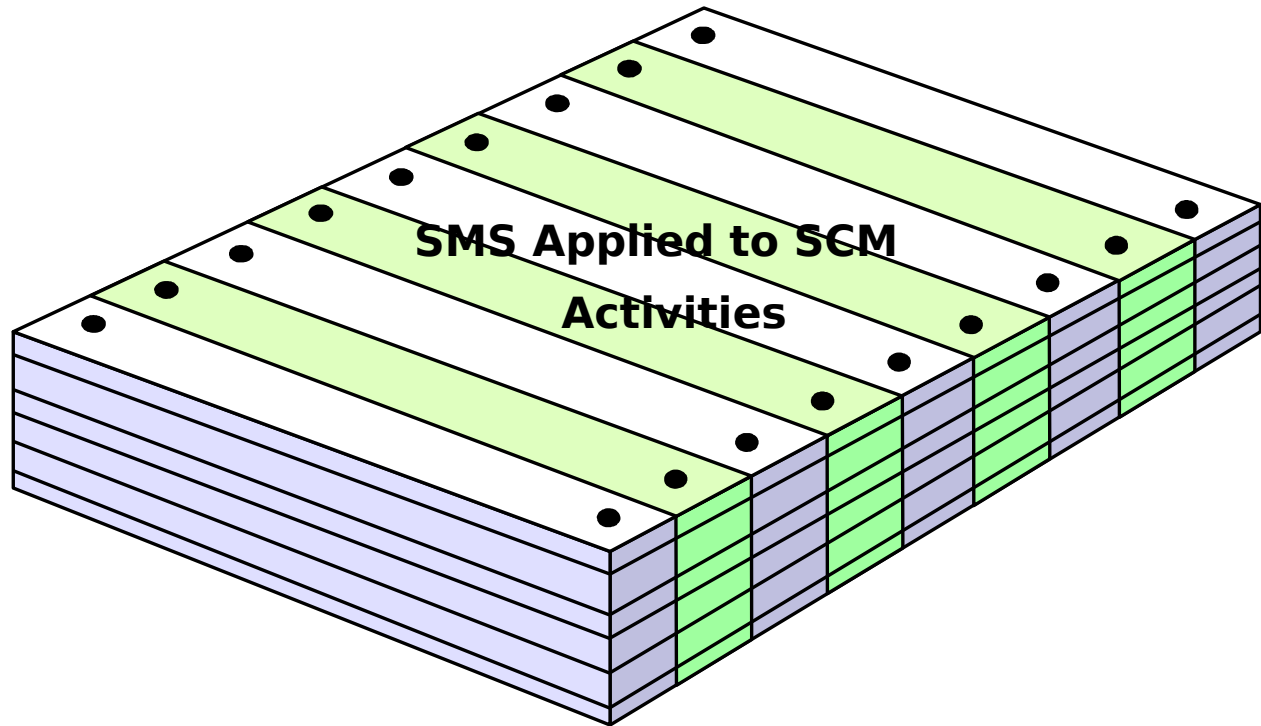
| DESIGN PREPARATION | SYSTEM/ SUBSYSTEM DESIGN | RESOURCE ESTIMATION |

CHANGE APPROVAL & PLANNING

| PROPOSED RELEASE PACKAGE DEVELOPMENT | RELEASE PLANNING ITSA PREP & ACCEPTANCE | RELEASE PLANNING | CCB REVIEW & APPROVAL | DEVELOPMENT ITSA PREP. & ACCEPTANCE |

CHANGE DEVELOPMENT

| Release Planning | SYSTEM DOCUMENTATION MODIFICATION | DETAILED SAT DEFINITION | DETAILED SQT DEFINITION | System/Subsystem Design & COMPUTER SOFTWARE UNIT SPECIFICATIONS DEVELOPMENT | DETAILED SIT DEFINITION | DETAILED UT DEFINITION | UNIT CODE & UNIT TEST(UT) |

Legend

| Software Engineer NON LEVEL 2 | Software Engineer & Customer NON-LEVEL 2 | Customer LEVEL 2 & NON-LEVEL 2 | Optional At This Point |

Software Engineer LEVEL 2

Software Engineer & Customer LEVEL 2

Optional if already Performed

CHANGE DEVELOPMENT (Contd.)

| SIT EXECUTION & CERTIFICATION | SQT EXECUTION & CERTIFICATION | SAT EXECUTION & CERTIFICATION |

CHANGE IMPLEMENTATION

| RELEASE IMPLEMEN- TATION | POST RELEASE IMPLEMEN- TATION |

SCM Plan

- **Defines:**
  - **What SCM activities are to be accomplished**
  - **How SCM activities are to be accomplished**
  - **Who is responsible for performing SCM activities**
  - **When SCM activities are to be accomplished**
  - **What resources are required to accomplish SCM activities**
  - **When the SCM Plan shall be reviewed, updated and approved**
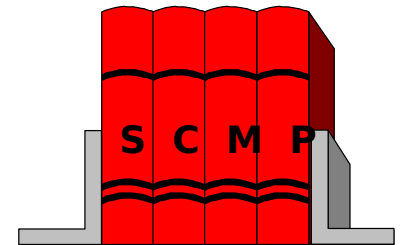
S C M P

SCM Plan

- **Document shall be:**
  - **Developed by the SCM Group**
  - **Based on DFAS and FSA CM Policies**
  - **Available to all project personnel involved with the SCM activities (i.e., virtually all project personnel)**
  - **Reviewed, updated and approved periodically   (e.g., during the early stages of each new release)**
  - **Controlled as a Configuration Ite**

S C M P

CM Terminology

```
P        S        C        C
T        C        C        I        RELEASE
R        R        O
```

```
T
D
R
```
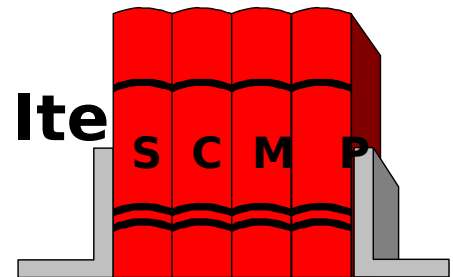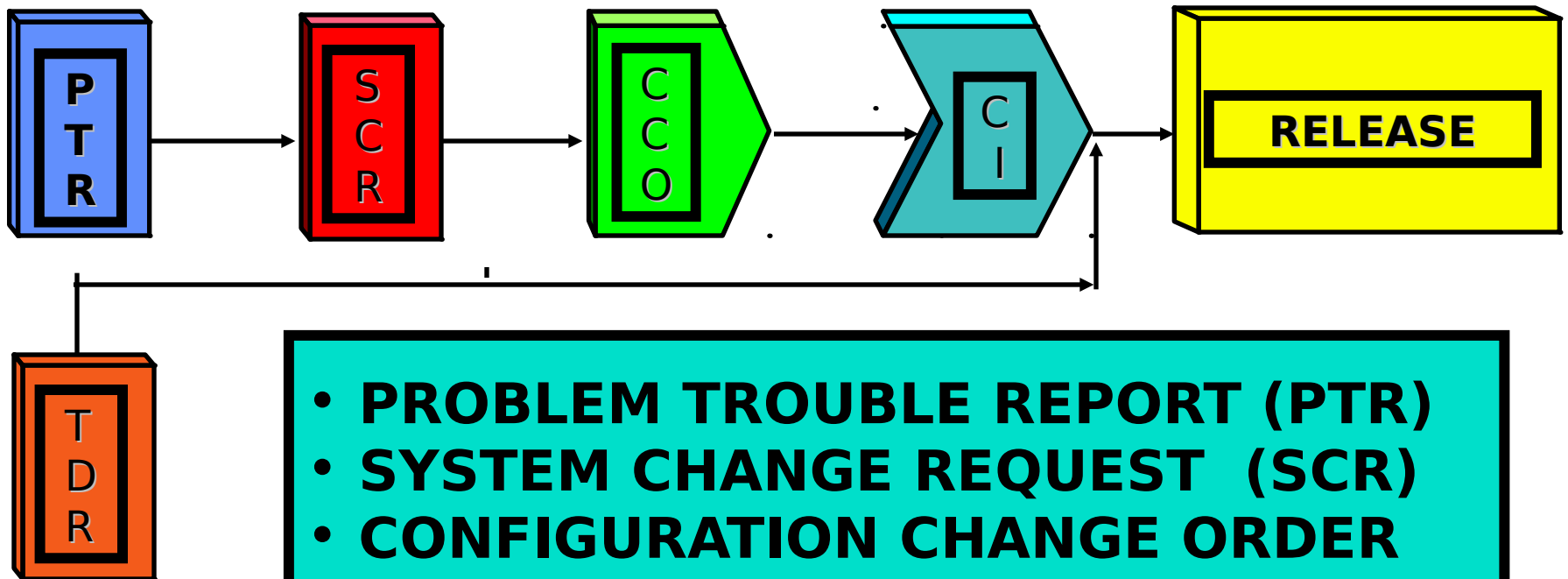
- **PROBLEM TROUBLE REPORT (PTR)**
- **SYSTEM CHANGE REQUEST (SCR)**
- **CONFIGURATION CHANGE ORDER (CCO)**
- **CONFIGURATION ITEM (CI)**
- **TEST DISCREPANCY REPORT (TDR)**
- **RELEASE**

Problem Trouble Report

P T R
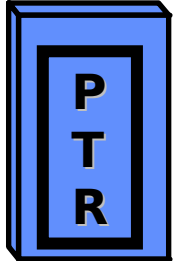
- **Description of a Detected Problem with:**
  - **AIS Design**
  - **AIS Software**
  - **AIS Documentation**
  - **Management Process (i.e., the SMS)**
- **Becomes SCR if PTR impacts CI(s)**
- **Closed if no impact on CI(s)**

System Change Request

S C R

- **Formalizes change request**

- **Identifies affected AIS**

- **Defines the change requirements**

- **Provides the associated Software Change Specification (SCS).**

- **Impacts Configuration Items (CI)**
  - **One CI or Many CIs**
  - **Requires a CCO**

PTR / SCR Process Overview
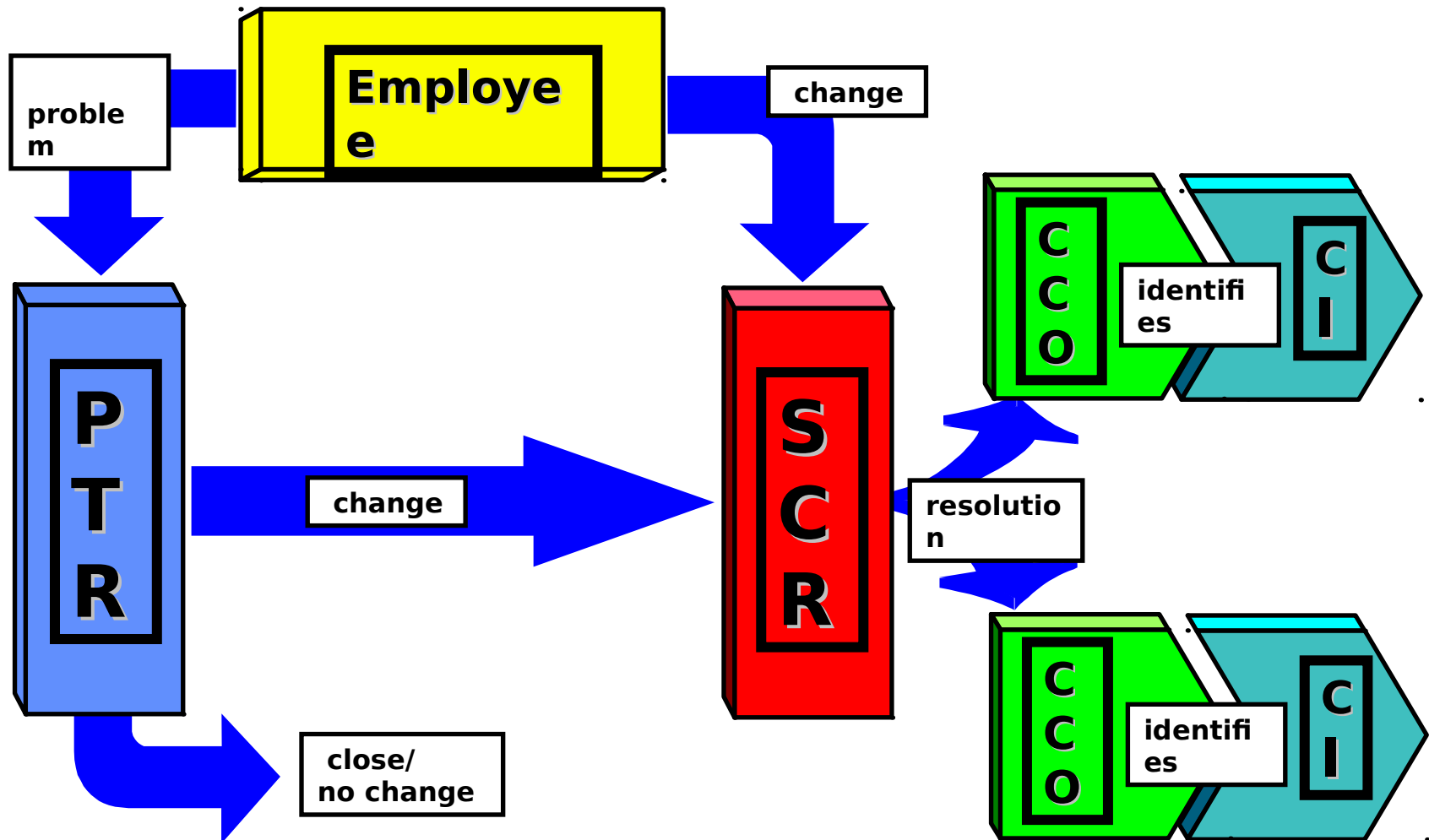
TEST DISCREPANCY REPORT (TDR)

T D R

- **SIGNIFIES SOME PORTION OF TEST FAILED**

- **ABLE TO CREATE CCOs TO IDENTIFY IMPACTED CIs**

Configuration Change Order
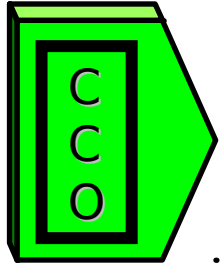
- **Identifies:**
  - **Configuration Item (CI) impacted**
    - a CCO addresses only one CI
  - **Responsibile software engineer**
  - **Estimated size of change**
  - **Estimated effort to implement change**
  - **Actual effort expended**
  - **Synopsis of change**

Configuration Item

C
I
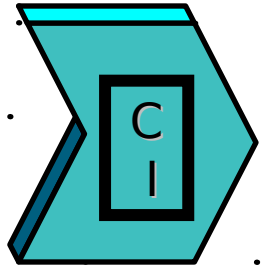
- **Is a separate single item of the AIS**

- **Is controlled**

- **Examples:**

  - **Functional Descriptions, Software Code, Test Entities, Standard Operating Procedures, Training Manuals, Etc..**

Release

RELEASE

- ## A collection of selected SCRs
  - ### For one AIS
  - ### Approved
  - ### Funded for implementation
  - ### Containing associated CI changes
- ## Once release occurs, it becomes the official version of an AIS.

SCR - CCO - CI Relationship
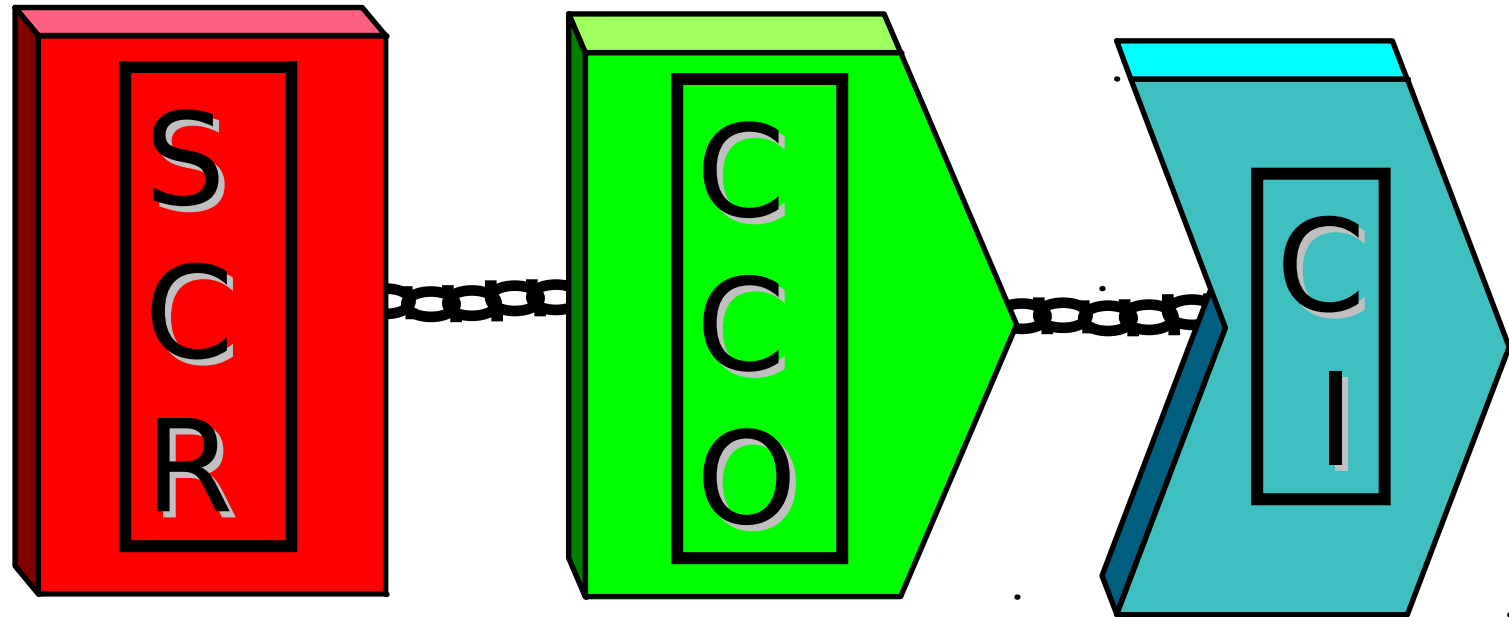
Typical SCR - CCO - CI Relationship

SCR

CCO

CCO

CI

CCO

CCO

CI

SCR

CCO

CCO

CI
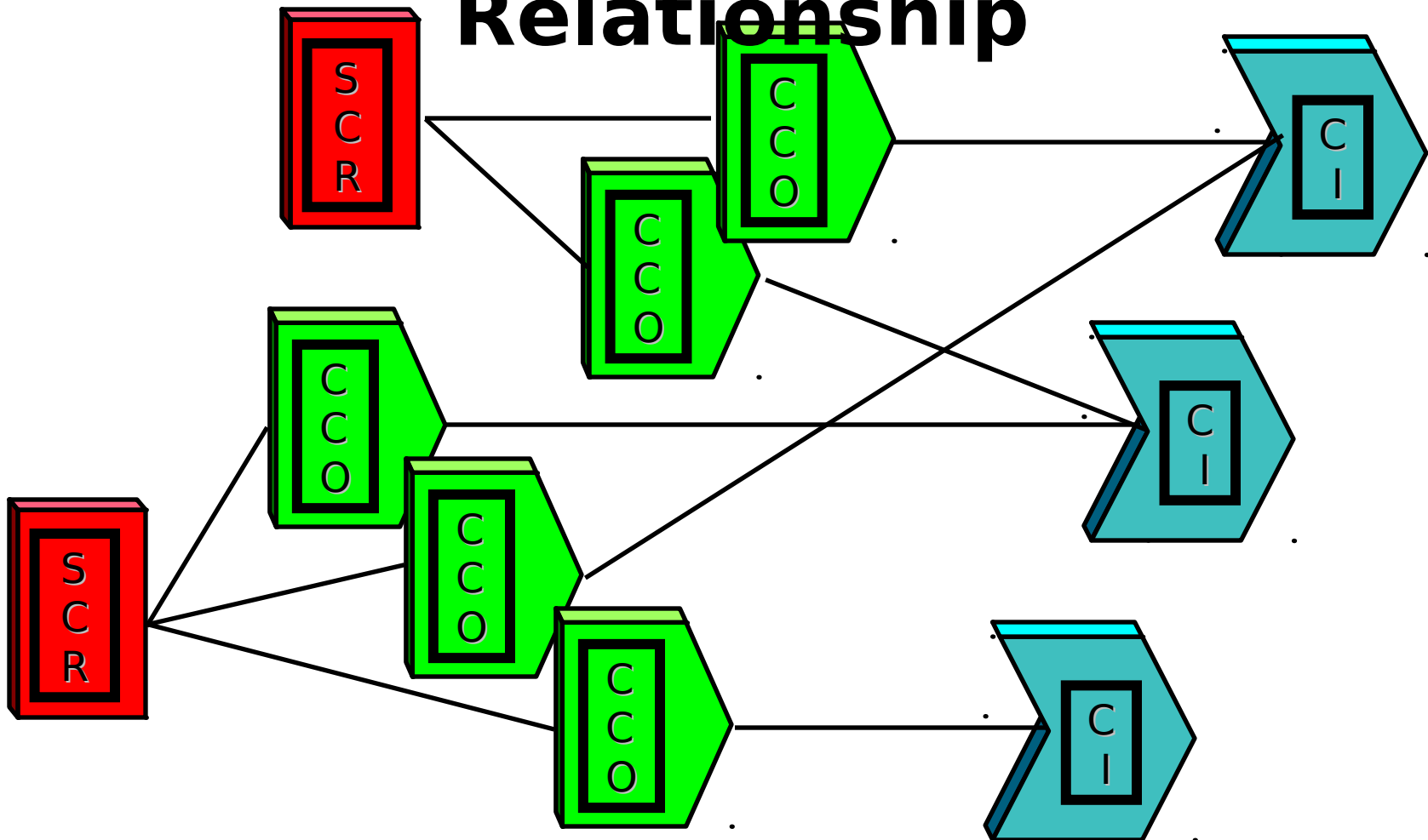
 Each SCR may affect multiple CIs which must be controlled by separate CCOs.

Software Baseline Library

- **The <u>Software Baseline Library</u> is a controlled   environment where the CIs and SCM records pertaining to the CI are stored and must have:**

  – **established controls to prevent unauthorized changes,**

  – **flexible service provided to programmers/testers,**

  – **development/testing applied to trial versions of CIs**

LIBRARY BASELINE CONTROL

- **NEED CONTROL & FLEXIBLE SERVICE**

- **NO REQUEST - NO CHANGE**

- **LOCKING CAPABILITY**

- **ALL CHANGES TESTED**

- **REGRESSION TESTING REQUIRED**

SOFTWARE BASELINES

- **REQUIREMENTS**
- **SPECIFICATION**
- **DESIGN**
- **UNIT**
- **INTEGRATION**
- **OPERATIONAL**

Effective SCM Benefits

- **Changes to Configuration Items are:**
  - **properly documented and approved**
  - **based on agreed upon requirements**
  - **traced through design and development**
  - **fully integrated and tested**
  - **implemented into a quality release**
  - **well orchestrated throughout system's life cycle**
- **Status is easily determined at any time**
- **Facilitates correction action, if required**

Review

Questions ?

SECTION 4

SMSApplied to SCM Activities
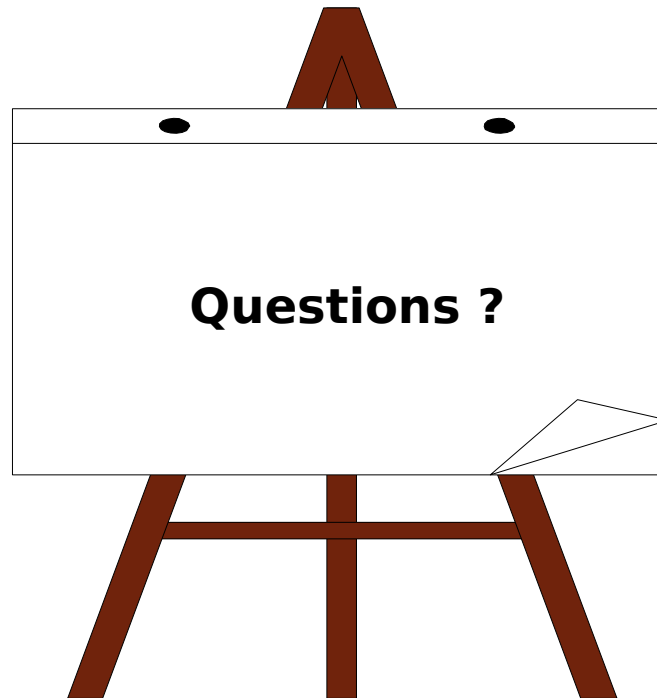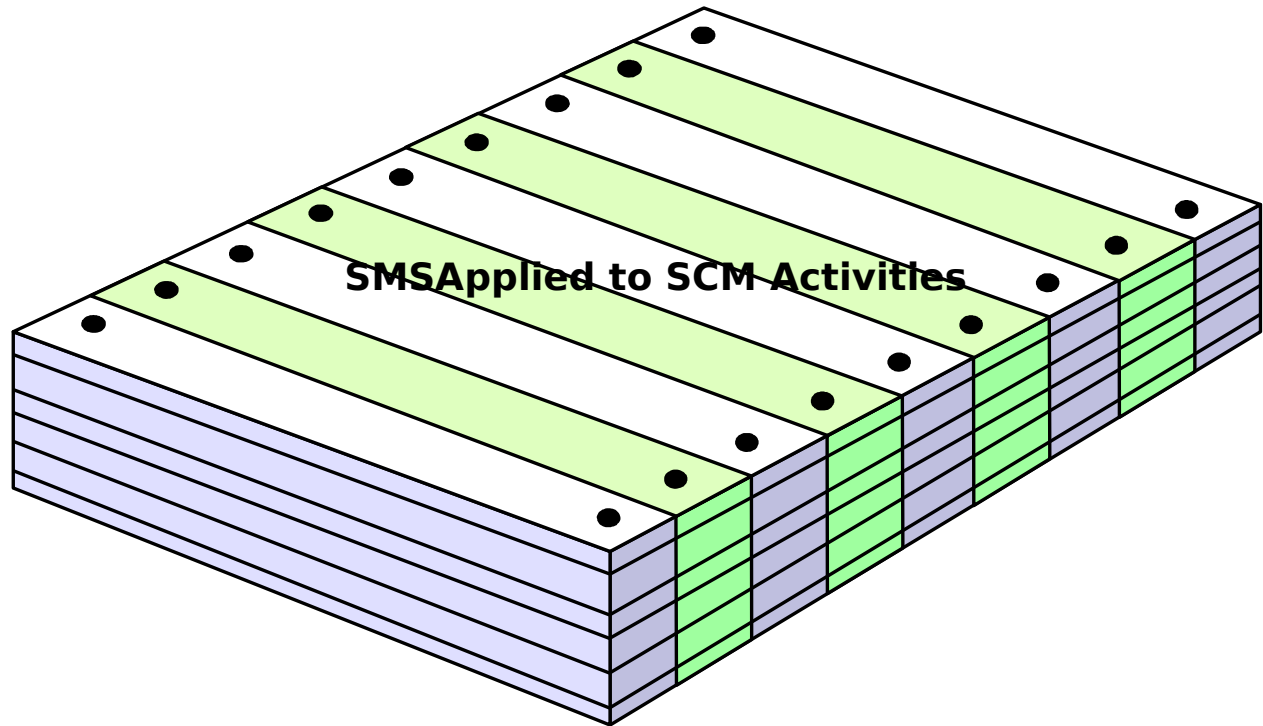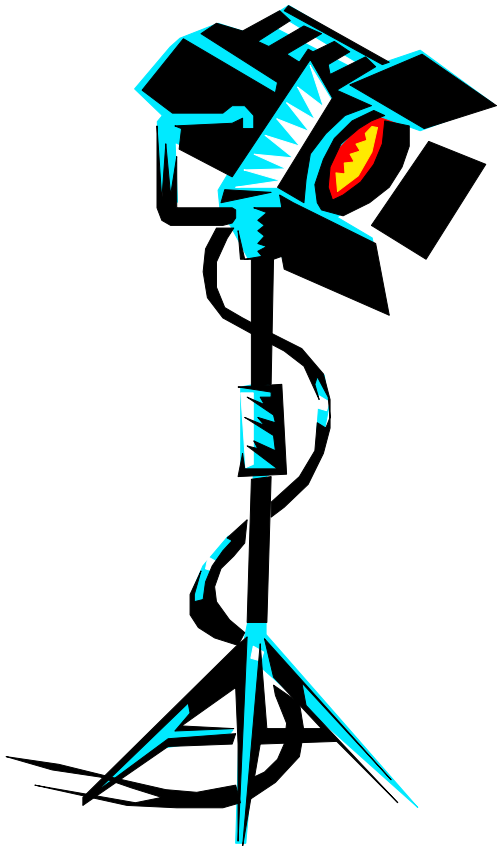
Configuration Management's First Role in the SMS

CHANGE INITIATION PHASE

Purpose: Define, record and track the initial actions to begin the cycle of change to an AIS by defining the problem or change and creating a Problem Trouble Report (PTR) or a System Change Request (SCR).

Subphases:
- **Problem (PTR) Documentation & Disposition**
- **Change (SCR) Initiation, Review, Approval, & Ranking**

Configuration Management's Second Role in the SMS

CHANGE APPROVAL AND PLANNING PHASE

Purpose: Establish a release package plan.

Subphases:
- **Release Planning**

Configuration Management's Third Role in the SMS

CHANGE DEVELOPMENT PHASE

Purpose: Modify the system design, software, documentation, test scripts and test data to fulfill System Change Request (SCR) requirements.

Subphases:
- **Release Planning**
- **System/Subsystem Design & CSU Specifications Development**
- **Unit Coding & Unit Testing Tracking and Oversight**
- **Software Integration Test (SIT) Execution and Certification**
- **Software Qualification Test (SQT) Execution and Certification**
- **Software Acceptance Test (SAT) Execution and Certification**

Configuration Management's Final Role in the SMS

CHANGE IMPLEMENTATION PHASE

Purpose: Immediately before release provide all users with the necessary documentation and training required to use the new release.

Perform a review after implementation to verify accuracy and completeness of the release.

Subphases:

- **Release Implementation**

SOFTWARE PROCESS ARCHITECTURE

SYSTEM MODIFICATION SCENARIO - PHASES & SUBPHASES

CHANGE DEFINITION

| CHANGE/ PROBLEM DEFINITION | PROBLEM (PTR) DOCUMENTATION & DISPOSITION | CHANGE (SCR) INITIATION, REVIEW, APPROVAL, & RANKING |

CHANGE DEFINITION

| FUNCTIONAL REQ'MENTS DEFINITION |

CHANGE ANALYSIS

| ANALYSIS PREPARATION | REQUIREMENTS SPECIFICATION & IMPACT ANALYSIS |

CHANGE ANALYSIS (Contd.)

| DESIGN PREPARATION | SYSTEM/ SUBSYSTEM DESIGN | RESOURCE ESTIMATION |

CHANGE APPROVAL & PLANNING

| PROPOSED RELEASE PACKAGE DEVELOPMENT | RELEASE PLANNING ITSA PREP & ACCEPTANCE | RELEASE PLANNING | CCB REVIEW & APPROVAL | DEVELOPMENT ITSA PREP. & ACCEPTANCE |

CHANGE DEVELOPMENT

| Release Planning | SYSTEM DOCUMENTATION MODIFICATION | DETAILED SAT DEFINITION | DETAILED SQT DEFINITION | System/Subsystem Design & COMPUTER SOFTWARE UNIT SPECIFICATIONS DEVELOPMENT | DETAILED SIT DEFINITION | DETAILED UT DEFINITION | UNIT CODE & UNIT TEST(UT) |

Legend

| Software Engineer NON LEVEL 2 | Software Engineer & Customer NON LEVEL 2 | Customer LEVEL 2 & NON-LEVEL 2 | Optional At This Point |

Software Engineer LEVEL 2

Software Engineer & Customer LEVEL 2

Optional if already Performed

CHANGE DEVELOPMENT (Contd.)

| SIT EXECUTION & CERTIFICATION | SQT EXECUTION & CERTIFICATION | SAT EXECUTION & CERTIFICATION |

CHANGE IMPLEMENTATION

| RELEASE IMPLEMEN- TATION | POST RELEASE IMPLEMEN- TATION |

3 TASKS

CHANGE INITIATION PHASE

Problem (PTR) Documentation

and

Disposition

Subphase

Technical PTR Initialization

Technical PTR Symptom Documentation

Technical PTR Disposition

Reference(s) or Standard (s):
Mil Std 973 17 APR 92
ANSI/IEEE Guide STD 1042-1987
CMIS Procedure Guide
DFAS 8000.1-R, Chap.9

Input (s):

Output (s):

1.2.2
Technical PTR Initialization Task
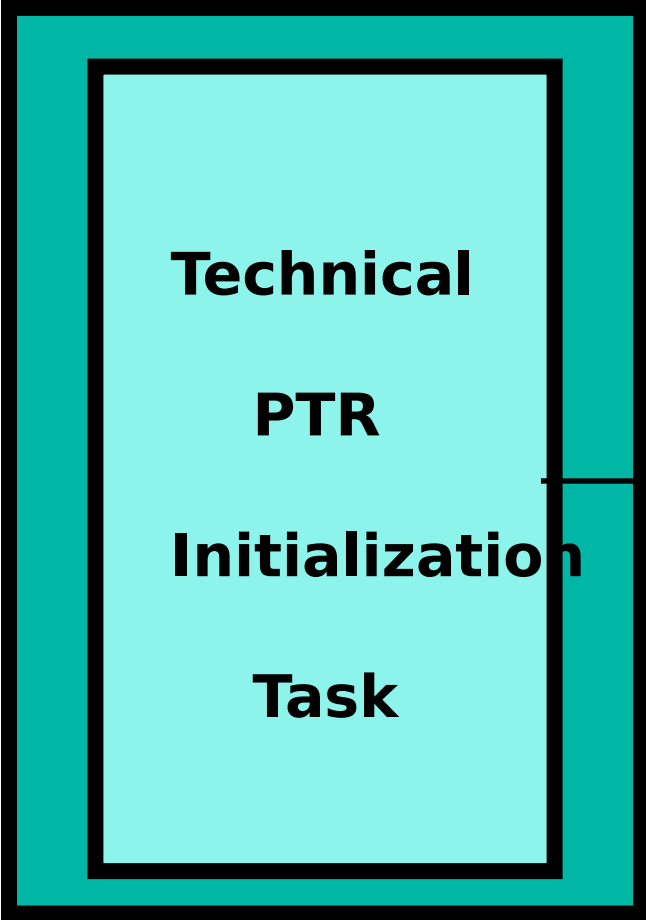
Purpose:
Once a problem has been identified, create a   Problem Trouble Report (PTR) using CMIS.

Categorized Change/Problem Requirement

PTR

Skill(s):

Computer Expertise

1 SUBTASK

Technical

PTR

Initialization

Task

PTR Data Entry Into CMIS

Technical PTR Initialization Task

PTR Documentation

Subtask (1 of 1)

Create a record for disposition and tracking.

Reference (s) or Standard (s):

Mil Std 973 17 APR 92
ANSI/IEEE Guide STD 1042-1987
CMIS Procedure Guide
DFAS 8000.1-R, Chap.9

Input (s):

PTR

SYSTEM
DOCUMENTATION

1.2.4
Technical PTR Symptom

Documentation Task

Output (s):

UPDATED
PTR

Purpose:
Define the symptoms associated with the
PTR.

Skill(s):

Computer Expertise

1 SUBTASK

Technical

PTR
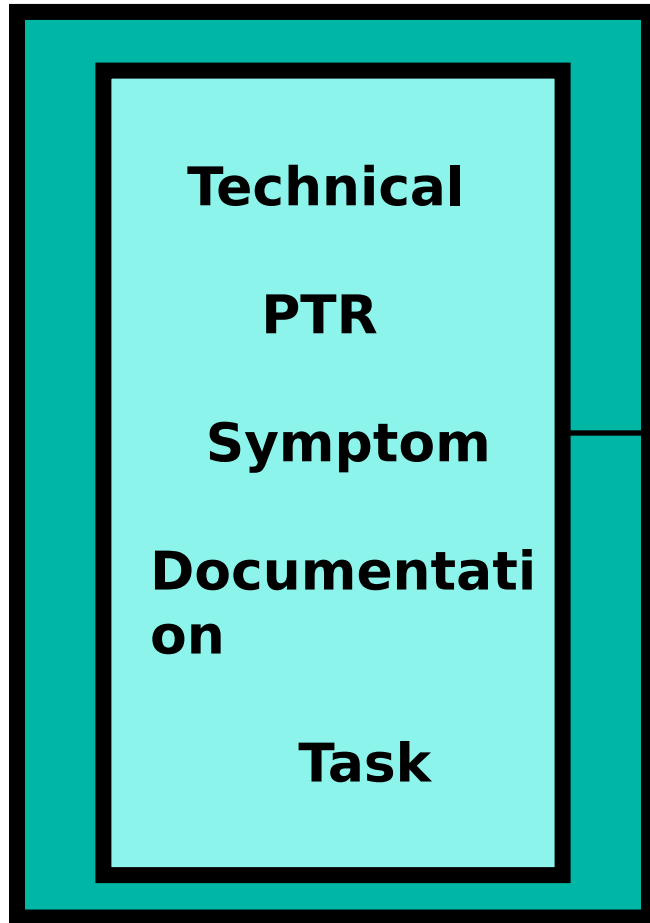
Symptom

Documentation

Task

Technical PTR Documentation

Technical PTR Symptom Documentation Task

Technical PTR Documentation Subtask (1 of 1)

- **Document Problem**
  - **Before Actions**
  - **During Actions**
  - **After Actions**
- **Examine Existing SCR for Identical Problems**

Reference (s) or Standard (s):

Mil Std 973 17 APR 92
ANSI/IEEE Guide STD 1042-1987
CMIS Procedure Guide
DFAS 8000.1-R, Chap.9

Input (s):

Categorized Change/Problem Requirement

PTR

Output (s):

1.2.8
Technical PTR Disposition Task

Purpose:
Complete the Problem Trouble Report (PTR) by resolving and closing the PTR or by converting the PTR to a System Change Request (SCR).

Closed PTR

PTR - Generated SCR

Skill(s):

Computer Expertise

1 SUBTASK

Technical

PTR

Disposition————— **PTR Finalization**
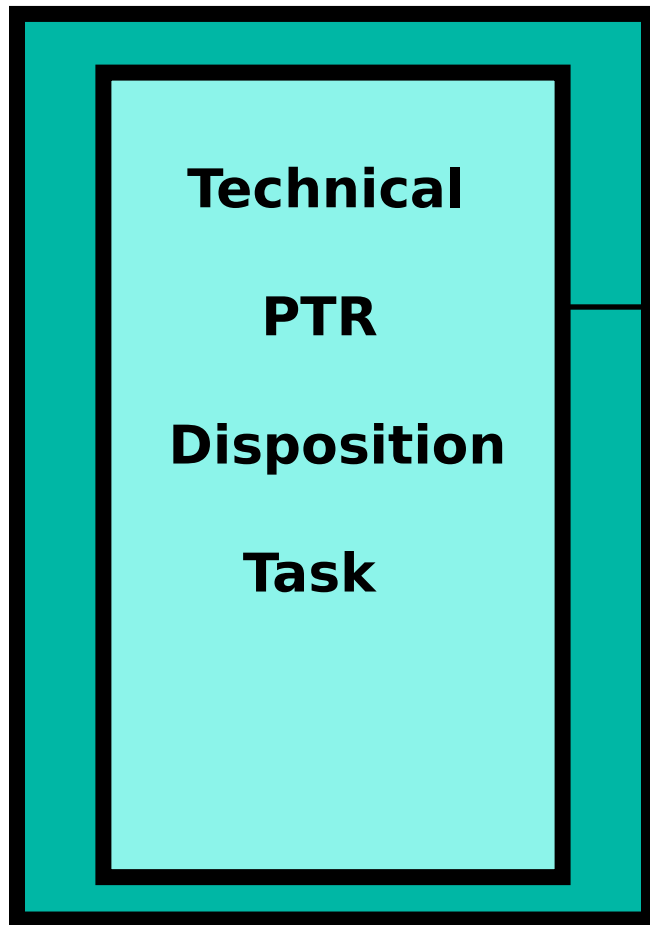
Task

Technical PTR Disposition Task

PTR Finalization

Subtask (1 of 1)

- **Finalize PTR by resolving or closing the PTR -or-**

- **Convert the PTR to an SCR.**

- **Notify the problem originator and other appropriate personnel of the problem resolution.**

Review

Questions ?

SYSTEM MODIFICATION SCENARIO - PHASES & SUBPHASES

CHANGE INITI...

- CHANGE/PROBLEM DEFINITION
- PROBLEM (PTR) DOCUMENTATION & DISPOSITION
- CHANGE (SCR) INITIATION, REVIEW, APPROVAL, & RANKING

CHANGE DEFINITION

- FUNCTIONAL REQ'MENTS DEFINITION

CHANGE ANALYSIS

- ANALYSIS PREPARATION
- REQUIREMENTS SPECIFICATION & IMPACT ANALYSIS

CHANGE ANALYSIS (Contd.)

- DESIGN PREPARATION
- SYSTEM/SUBSYSTEM DESIGN
- RESOURCE ESTIMATION

CHANGE APPROVAL & PLANNING

- PROPOSED RELEASE PACKAGE DEVELOPMENT
- RELEASE PLANNING ITSA PREP & ACCEPTANCE
- RELEASE PLANNING
- CCB REVIEW & APPROVAL
- DEVELOPMENT ITSA PREP. & ACCEPTANCE

CHANGE DEVELOPMENT

- Release Planning
- SYSTEM DOCUMENTATION MODIFICATION
- DETAILED SAT DEFINITION
- DETAILED SQT DEFINITION
- System/Subsystem Design & COMPUTER SOFTWARE UNIT SPECIFICATIONS DEVELOPMENT
- DETAILED SIT DEFINITION
- DETAILED UT DEFINITION
- UNIT CODE & UNIT TEST(UT)

Legend

- Software Engineer NON LEVEL 2
- Software Engineer & Customer NON-LEVEL 2
- Customer LEVEL 2 & NON-LEVEL 2
- Optional At This Point
- Software Engineer LEVEL 2
- Software Engineer & Customer LEVEL 2
- Optional if already Performed

CHANGE DEVELOPMENT (Contd.)

- SIT EXECUTION & CERTIFICATION
- SQT EXECUTION & CERTIFICATION
- SAT EXECUTION & CERTIFICATION

CHANGE IMPLEMENTATION

- RELEASE IMPLEMEN-TATION
- POST RELEASE IMPLEMEN-TATION

2 TASKS

CHANGE INITIATION PHASE

Change (SCR) Initiation, Review , Approval and Ranking Subphase

SCR Technical Initiation Task

Preliminary Technical Review and Approval Task

Reference (s) or Standard (s):

Mil Std 973 17 APR 92
ANSI/IEEE Guide STD 1042-1987
CMIS Procedure Guide
DFAS 8000.1-R, Chap.9

Input (s):

Categorized Change/Problem Requirement

PTR-Generated SCR

1.3.2
SCR Technical Initiation Task

Purpose:
Initiate the requirements for a System Change Request (SCR) including the date, reporting organization, title, SCR category, point of contact, and completion priority. The SCR description and requester benefits are briefly defined.

Output (s):

Initialized SCR

Skill(s):
Computer Expertise
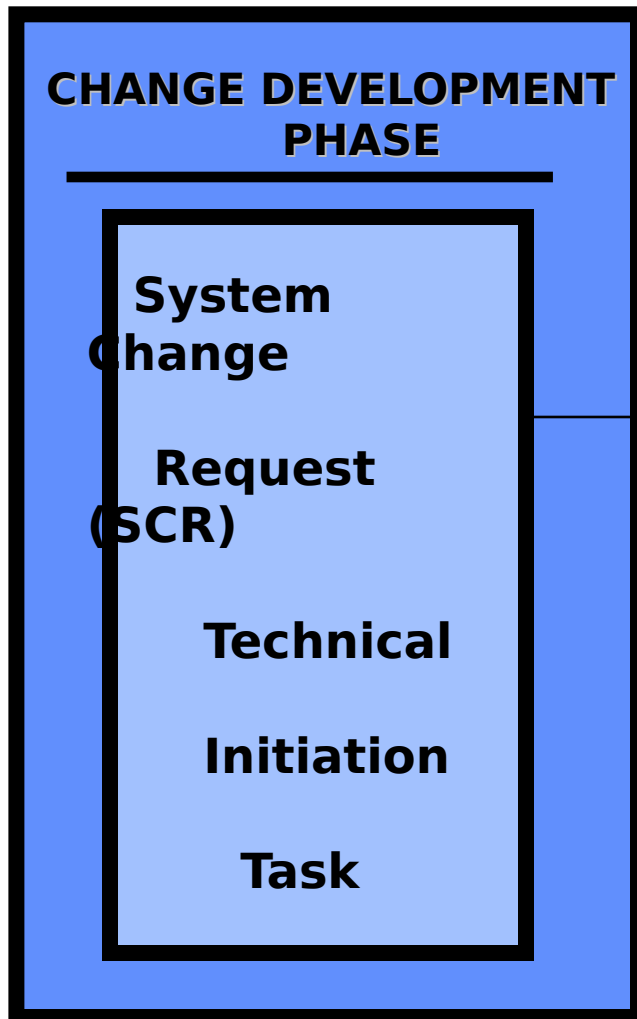
1 SUBTASK

CHANGE DEVELOPMENT PHASE

System Change Request (SCR) Technical Initiation Task

Technical SCR Data Recording

System Change Request (SCR) Technical Initiation Task

Technical SCR Data Recording

Subtask (1 of 1)

RECORD THE FOLLOWING DATA:

Date   Title

Category   POC

Requesting organization

SCR Requirement

Requester benefits information

Reference (s) or Standard (s):
Mil Std 973 17 APR 92
ANSI/IEEE Guide STD 1042-1987
CMIS Procedure Guide
DFAS 8000.1-R, Chap. 9

Input (s):

Reviewed SCR

Output (s):

Cancelled SCR

Pre-approved SCR

1.3.4
Preliminary Technical Review and Approval Task
Purpose:
Every System Change Request must go through a preliminary review process.

Skill(s):
Computer Expertise

1 SUBTASK

Preliminary

Technical

Review and

Approval

Task

Technical System Change Request Approval

Preliminary Technical Review and Approval Task

Technical SCR Approval

Subtask (1 of 1)

TCC/FCC/CCB:

- **Approves the SCR for further work.**

- **Disapproves the SCR for further action or cancels the SCR.**

- **Notifies the originator and other appropriate parties of the resolution.**

Review

Questions ?

SOFTWARE PROCESS ARCHITECTURE

SYSTEM MODIFICATION SCENARIO - PHASES & SUBPHASES

CHANGE INITIATION

| CHANGE/ PROBLEM DEFINITION | PROBLEM (PTR) DOCUMENTATION & DISPOSITION | CHANGE (SCR) INITIATION, REVIEW, APPROVAL, & RANKING |

CHANGE DEFINITION

FUNCTIONAL REQ'MENTS DEFINITION

CHANGE ANALYSIS

| ANALYSIS PREPARATION | REQUIREMENTS SPECIFICATION & IMPACT ANALYSIS |

CHANGE ANALYSIS (Contd.)

| DESIGN PREPARATION | SYSTEM/ SUBSYSTEM DESIGN | RESOURCE ESTIMATION |

CHANGE APPROVAL & PLANNING

| PROPOSED RELEASE PACKAGE DEVELOPMENT | RELEASE PLANNING ITSA PREP & ACCEPTANCE | RELEASE PLANNING | CCB REVIEW & APPROVAL | DEVELOPMENT ITSA PREP. & ACCEPTANCE |

CHANGE DEVELOPMENT

| Release Planning | SYSTEM DOCUMENTATION MODIFICATION | DETAILED SAT DEFINITION | DETAILED SQT DEFINITION | System/Subsystem Design & COMPUTER SOFTWARE UNIT SPECIFICATIONS DEVELOPMENT | DETAILED SIT DEFINITION | DETAILED UT DEFINITION | UNIT CODE & UNIT TEST(UT) |

Legend

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Software Engineer LEVEL 2

Software Engineer & Customer LEVEL 2

Optional if already Performed

CHANGE DEVELOPMENT (Contd.)

| SIT EXECUTION & CERTIFICATION | SQT EXECUTION & CERTIFICATION | SAT EXECUTION & CERTIFICATION |

CHANGE IMPLEMENTATION

| RELEASE IMPLEMEN- TATION | POST RELEASE IMPLEMEN- TATION |

SOFTWARE PROCESS ARCHITECTURE

SYSTEM MODIFICATION SCENARIO - PHASES & SUBPHASES

CHANGE INITIATION

CHANGE/ PROBLEM DEFINITION	PROBLEM (PTR) DOCUMENTATION & DISPOSITION	CHANGE (SCR) INITIATION, REVIEW, APPROVAL, & RANKING

CHANGE DEFINITION

FUNCTIONAL REQ'MENTS DEFINITION

CHANGE ANALYSIS

ANALYSIS PREPARATION	REQUIREMENTS SPECIFICATION & IMPACT ANALYSIS

CHANGE ANALYSIS (Contd.)

DESIGN PREPARATION	SYSTEM/ SUBSYSTEM DESIGN	RESOURCE ESTIMATION

CHANGE APPROVAL & PLANNING

PROPOSED RELEASE PACKAGE DEVELOPMENT	RELEASE PLANNING ITSA PREP & ACCEPTANCE	RELEASE PLANNING	CCB REVIEW & APPROVAL	DEVELOPMENT ITSA PREP. & ACCEPTANCE

CHANGE DEVELOPMENT

Release Planning	SYSTEM DOCUMENTATION MODIFICATION	DETAILED SAT DEFINITION	DETAILED SQT DEFINITION	System/Subsystem Design & COMPUTER SOFTWARE UNIT SPECIFICATIONS DEVELOPMENT	DETAILED SIT DEFINITION	DETAILED UT DEFINITION	UNIT CODE & UNIT TEST(UT)

Legend

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Software Engineer LEVEL 2	Software Engineer & Customer LEVEL 2	Optional if already Performed

CHANGE DEVELOPMENT (Contd.)

SIT EXECUTION & CERTIFICATION	SQT EXECUTION & CERTIFICATION	SAT EXECUTION & CERTIFICATION

CHANGE IMPLEMENTATION

RELEASE IMPLEMEN- TATION	POST RELEASE IMPLEMEN- TATION

CHANGE APPROVAL & PLANNING PHASE

Release

Planning

Subphase

1 TASK

Project SCM Plan Modification

Reference (s) or Standard (s):

Mil Std 973 17 APR 92
ANSI/IEEE Guide STD 1042-1987
DFAS 8000.1-R, Chap. 9

Input (s):

Proposed Approved Release Plan

SCM Plan

4.3.3   Project SCM Plan Modification Task

PURPOSE:

Review and update, if necessary, the Software Configuration Management Plan (SCMP).

Output (s):

Revised SCM Plan

Skill(s):

Computer Expertise
Functional Expertise

2 SUBTASKS

Project Software

Configuration

Management Plan
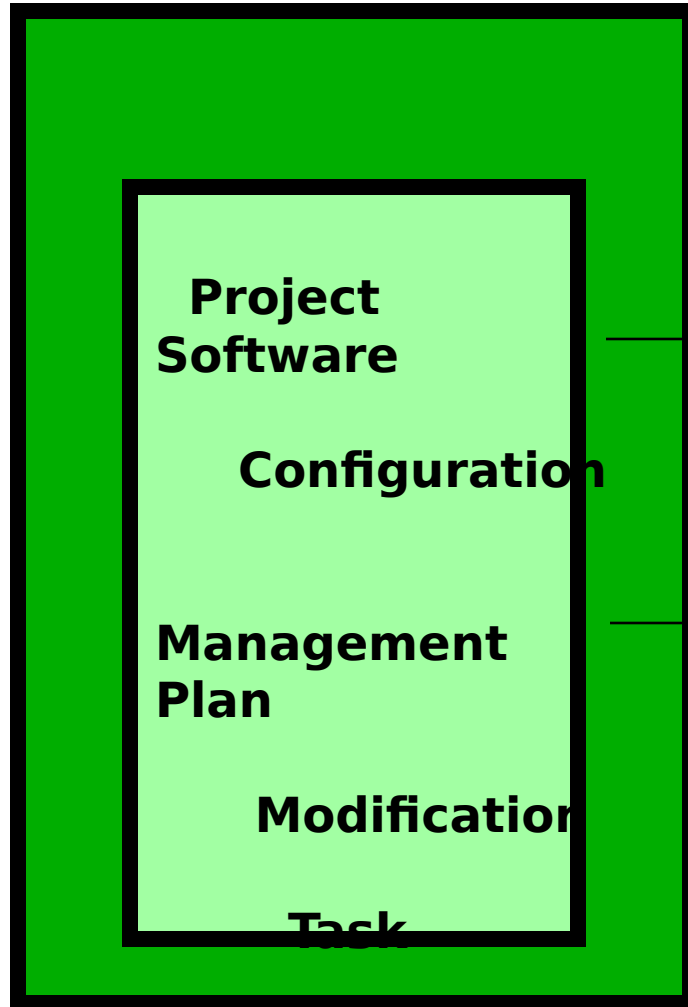
Modification

Task

SCM Plan Modification

SCM Plan Modification Checklists

Project Software Configuration Management (SCM) Plan Modification Task

SCM Plan Modification

Subtask (1 of 2)

Modifications to the SCMP include the sections:

- Introduction   - Management

- Activities   - Supplier control

- Tools, techniques and methodologies

- Records collection   - Certification

Project Software Configuration Management (SCM) Plan Modification Task

SCM Plan Modification Subtask (1 of 2) (Continued)

- **Procedures for the SCM Plan:**

  1. **Introduction includes:**

  – **Purpose   - Scope   - Definitions**

  – **Mnemonics   - References**

  2. **Management**

  – **Relates CM elements to project's management organization**

  – **Specifies necessary budget requirements**

Project Software Configuration Management (SCM) Plan Modification Task

SCM Plan Modification
Subtask (1 of 2) (Continued)

- **Procedures for the SCM Plan:**

   3. Activities:

   –   **Updates CM Responsibilities**

   –   **Describes who/how to carry out responsibilities**

   4. Tools/Techniques/Methodologies

   –   **Describes Library**

   –   **Identifies Library control of CI**

   - Capture   - Store   - Promote   - Release

Project Software Configuration Management (SCM) Plan Modification Task

SCM Plan Modification Subtask (1 of 2) (Continued)

- **Procedures for the SCM Plan:**

    5. Supplier Control:

    Applies SCM where you have no direct control

    - Computer projects   - Vendors   - Subcontractors

    6. Records Changes to:

    - Location of Data   - Retention of Data

    - Risk Assessment   - Security

Project Software Configuration Management (SCM) Plan Modification Task

SCM Plan Modification Subtask (1 of 2) (Continued)

- **Procedures for the SCM Plan:**

  7. Certification:

  – **Evaluated by software engineering managers for accuracy and completeness.**

  – **Evaluated by staff SCM personnel for compliance with procedures outlined in the FSO scenario processes.**

Project Software Configuration Management (SCM) Plan Modification Task
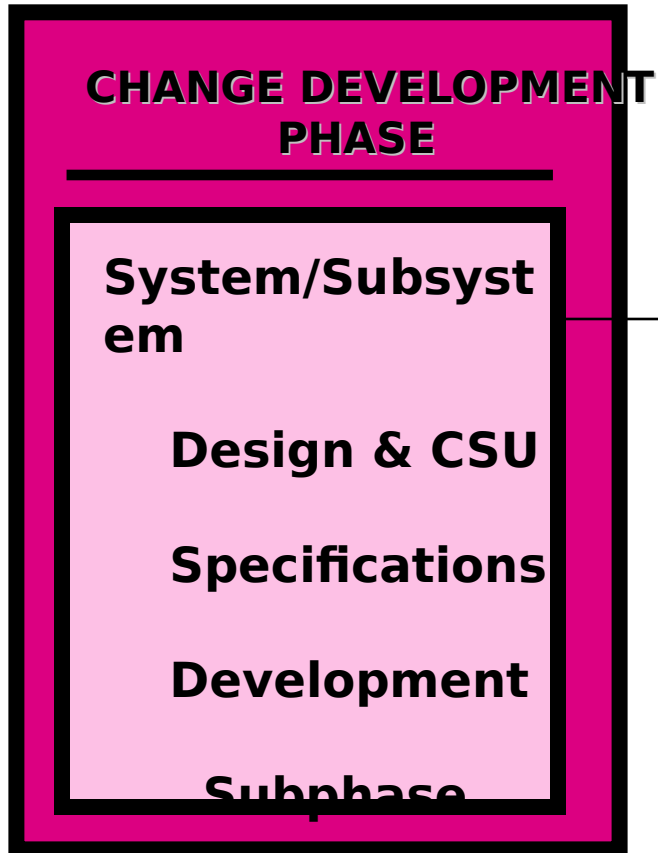
SCM Plan Modification Checklists Subtask (2 of 2)

- **A guide for reviewing/preparing modifications to the SCMP.**
  - **Configuration Identification Checklist**
  - **Configuration Control Checklist**
  - **Status Accounting Checklist**
  - **Audit Checklist**
  - **General Checklist**
  - **Program Phasing Checklist**
  - **Service Provider Checklist**

Review

Questions ?

SOFTWARE PROCESS ARCHITECTURE

SYSTEM MODIFICATION SCENARIO - PHASES & SUBPHASES

CHANGE INITIATION

CHANGE/ PROBLEM DEFINITION	PROBLEM (PTR) DOCUMENTATION & DISPOSITION	CHANGE (SCR) INITIATION, REVIEW, APPROVAL, & RANKING

CHANGE DEFINITION

FUNCTIONAL REQ'MENTS DEFINITION

CHANGE ANALYSIS

ANALYSIS PREPARATION	REQUIREMENTS SPECIFICATION & IMPACT ANALYSIS

CHANGE ANALYSIS (Contd.)

DESIGN PREPARATION	SYSTEM/ SUBSYSTEM DESIGN	RESOURCE ESTIMATION

CHANGE APPROVAL & PLANNING

PROPOSED RELEASE PACKAGE DEVELOPMENT	RELEASE PLANNING ITSA PREP & ACCEPTANCE	RELEASE PLANNING	CCB REVIEW & APPROVAL	DEVELOPMENT ITSA PREP. & ACCEPTANCE

CHANGE D...

Release Planning	SYSTEM DOCUMENTATION MODIFICATION	DETAILED SAT DEFINITION	DETAILED SQT DEFINITION	System/Subsystem Design & COMPUTER SOFTWARE UNIT SPECIFICATIONS DEVELOPMENT	DETAILED SIT DEFINITION	DETAILED UT DEFINITION	UNIT CODE & UNIT TEST(UT)

Legend

Software Engineer NON LEVEL 2	Software Engineer & Customer NON-LEVEL 2	Customer LEVEL 2 & NON-LEVEL 2	Optional At This Point

Software Engineer LEVEL 2	Software Engineer & Customer LEVEL 2	Optional if already Performed

CHANGE DEVELOPMENT (Contd.)

SIT EXECUTION & CERTIFICATION	SQT EXECUTION & CERTIFICATION	SAT EXECUTION & CERTIFICATION

CHANGE IMPLEMENTATION

RELEASE IMPLEMEN-TATION	POST RELEASE IMPLEMEN-TATION

Slide 105

CHANGE DEVELOPMENT PHASE

1 TASK

System/Subsystem

Design & CSU

Specifications

Development

Subphase

Release Implementation Plan Development

Reference (s) or Standard (s):

Mil Std 973 17 APR 92
ANSI/IEEE Guide STD 1042-1987
DFAS 8000.1-R, Chap. 9

Input (s):

Software Implementation Plan (SIP)

5.5.6   Release Implementation Plan Development Task

PURPOSE:

- **Modify existing Software Implementation Plan (SIP) OR create an implementation plan.**

- **Release Implementation Plan is developed only when the considerations of the release require special guidance.**

Output (s):

Modified Software Implementation Plan (SIP)

Release Implementation Plan

Skill(s):

Computer Expertise

1 SUBTASK

Release

Implementation

Plan
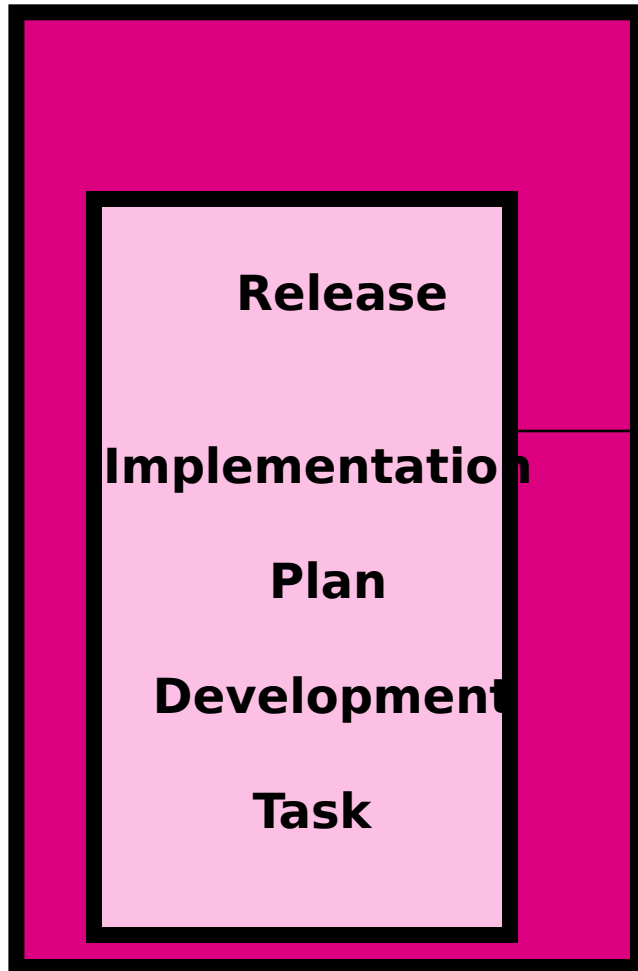
Development

Task

Release Implementation Plan Considerations

Release Implementation Plan Development Task

Release Implementation Plan Considerations
Subtask (1 of 1)

Procedures 1-7:

- **Review these areas and include instructions/actions, as needed, in the Release Implementation Plan.**

  - **Technical/Functional Training Considerations**
  - **Software Library Considerations**
  - **Hardware Upgrade Considerations**
  - **Database Conversion Considerations**
  - **Release Documentation Considerations**
  - **Release User Procedural Change Considerations**
  - **Release Operations Procedural Change Considerations**

Review

Questions ?

SOFTWARE PROCESS ARCHITECTURE

SYSTEM MODIFICATION SCENARIO - PHASES & SUBPHASES

CHANGE INITIATION

CHANGE/ PROBLEM DEFINITION	PROBLEM (PTR) DOCUMENTATION & DISPOSITION	CHANGE (SCR) INITIATION, REVIEW, APPROVAL, & RANKING

CHANGE DEFINITION

FUNCTIONAL REQ'MENTS DEFINITION

CHANGE ANALYSIS

ANALYSIS PREPARATION	REQUIREMENTS SPECIFICATION & IMPACT ANALYSIS

CHANGE ANALYSIS (Contd.)

DESIGN PREPARATION	SYSTEM/ SUBSYSTEM DESIGN	RESOURCE ESTIMATION

CHANGE APPROVAL & PLANNING

PROPOSED RELEASE PACKAGE DEVELOPMENT	RELEASE PLANNING ITSA PREP & ACCEPTANCE	RELEASE PLANNING	CCB REVIEW & APPROVAL	DEVELOPMENT ITSA PREP. & ACCEPTANCE

CHANGE DEVELOPMENT

Release Planning	SYSTEM DOCUMENTATION MODIFICATION	DETAILED SAT DEFINITION	DETAILED SQT DEFINITION	System/Subsystem Design & COMPUTER SOFTWARE UNIT SPECIFICATION DEVELOPMENT	DETAILED SIT DEFINITION	DETAILED UT DEFINITION	UNIT CODE & UNIT TEST(UT)

Legend

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Software Engineer LEVEL 2

Software Engineer & Customer LEVEL 2

Optional if already Performed

CHANGE DEVELOPMENT (Contd.)

SIT EXECUTION & CERTIFICATION	SQT EXECUTION & CERTIFICATION	SAT EXECUTION & CERTIFICATION

CHANGE IMPLEMENTATION

RELEASE IMPLEMEN- TATION	POST RELEASE IMPLEMEN- TATION

1 TASK

CHANGE DEVELOPMENT PHASE

Detailed Software

Integration Test

(SIT)

Definition

Subphase
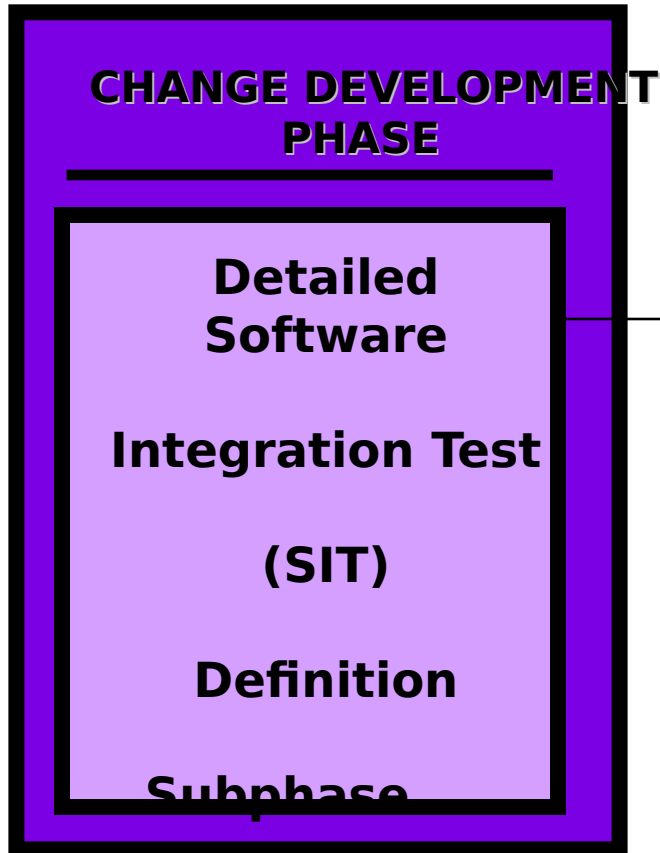
Software Integration Test (SIT) Scripts Evaluation Certification

Reference (s) or Standard (s):   **DFAS 5002.1 G**

Input (s):

Software Development Plan (SDP)

Test Scripts

5.6.4 **Software Integration Test (SIT) Scripts Evaluation Certification**

PURPOSE:
- **Evaluate and approve, in accordance with the SDP, the SIT scripts.**

Output (s):

Test Scripts

Test Scripts Certification

Test CM Library Update

Skill(s):

**Project Management
Release Management
Testing**

1 SUBTASK

Software Integration Test (SIT)

Scripts

Evaluation &

Certification
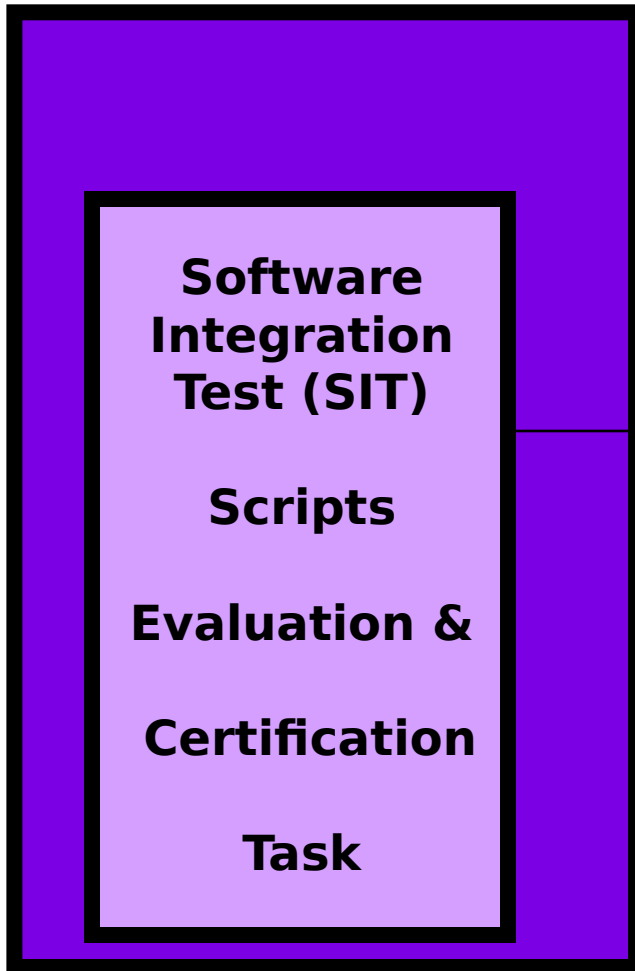
Task

Test CM Library Update

Software Integration Test (SIT) Scripts Evaluation & Certification Task

Test CM Library Update Subtask (1 of 1)

Procedure: Migration Notice -

Move CIs to Appropriate test library

SOFTWARE PROCESS ARCHITECTURE

SYSTEM MODIFICATION SCENARIO - PHASES & SUBPHASES

CHANGE INITIATION

CHANGE/ PROBLEM DEFINITION	PROBLEM (PTR) DOCUMENTATION & DISPOSITION	CHANGE (SCR) INITIATION, REVIEW, APPROVAL, & RANKING

CHANGE DEFINITION

FUNCTIONAL REQ'MENTS DEFINITION

CHANGE ANALYSIS

ANALYSIS PREPARATION	REQUIREMENTS SPECIFICATION & IMPACT ANALYSIS

CHANGE ANALYSIS (Contd.)

DESIGN PREPARATION	SYSTEM/ SUBSYSTEM DESIGN	RESOURCE ESTIMATION

CHANGE APPROVAL & PLANNING

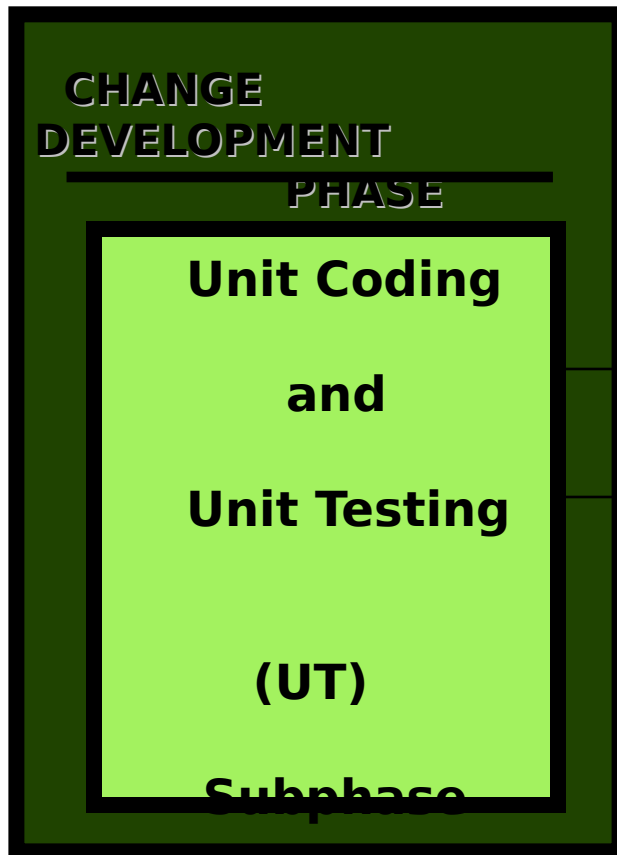| PROPOSED RELEASE PACKAGE DEVELOPMENT	RELEASE PLANNING ITSA PREP & ACCEPTANCE	RELEASE PLANNING	CCB REVIEW & APPROVAL	DEVELOPMENT ITSA PREP. & ACCEPTANCE

CHANGE DEVELOPMENT

Release Planning	SYSTEM DOCUMENTATION MODIFICATION	DETAILED SAT DEFINITION	DETAILED SQT DEFINITION	System/Subsystem Design & COMPUTER SOFTWARE UNIT SPECIFICATIONS DEVELOPMENT	DETAILED SIT DEFINITION	DETAILED UT DEFINITION	UNIT CODE & UNIT TEST(UT)

Legend

Software Engineer NON LEVEL 2	Software Engineer & Customer NON LEVEL 2	Customer LEVEL 2 & NON-LEVEL 2	Optional At This Point

Software Engineer LEVEL 2	Software Engineer & Customer LEVEL 2	Optional if already Performed

CHANGE DEVELOPMENT (Contd.)

SIT EXECUTION & CERTIFICATION	SQT EXECUTION & CERTIFICATION	SAT EXECUTION & CERTIFICATION

CHANGE IMPLEMENTATION

RELEASE IMPLEMEN- TATION	POST RELEASE IMPLEMEN- TATION

CHANGE DEVELOPMENT PHASE

Unit Coding

and

Unit Testing

(UT)

Subphase

2 TASKS

Unit Baseline/Library Maintenance

Unit Test (UT) Evaluation

Reference (s) or Standard (s):

Mil Std 973 17 APR 92
ANSI/IEEE Guide STD 1042-1987
CMIS Procedure Guide
DFAS 8000.1 -R, Chap. 9

Input (s):

Production Baseline
SCR
Design
Specifications

Output (s):

Unit Testing
Baseline

5.8.   Unit Baseline/Library
2   Maintenance Task
PURPOSE:

•**Establish a development environment consisting of those CI s identified as CSUs necessary to accomplish modification tasks.**

•**CSUs are migrated from production or SIT environments to ensure correct CSU version will be modified.**

•**Release Management (RM) staff monitors and supports the process.**

Skill(s):

Computer Expertise

1 SUBTASK

Unit

Baseline/Library
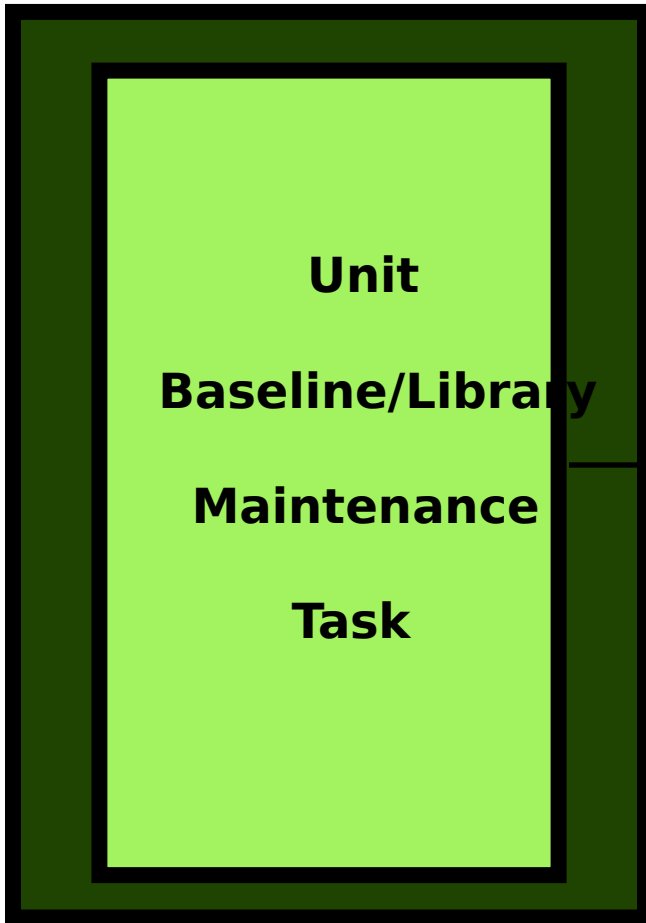
Maintenance

Task

UT Computer Software Unit (CSU) Checkout

Unit Baseline/Library Maintenance Task

UT Computer Software Unit (CSU) Check Out Subtask (1 of 1)

Procedures:

- **Development/Maintenance staff migrates CSU CIs under Release Management control from Production or SIT environment to Development or Maintenance.**

Notes:

- **CMIS produces a start notification message to appropriate staff.**

- **If CMIS is not available, the notification task must be performed manually.**

- **All CSUs are CIs, but not all CIs are CSUs.**

Reference (s) or Standard (s):

Mil Std 973 17 APR 92
ANSI/IEEE Guide STD 1042-1987
CMIS Procedure Guide
DFAS 8000.1-R, Chap. 9
DFAS 5002.1-G

Input (s):

Test Results

5.8.8	Unit Test (UT) Evaluation Task

PURPOSE:
Produce a Test Results Certification to certify the Computer Software Unit (CSU) has completed unit testing and is ready for Software Integration Test (SIT).

Output (s):

CI Delivery Notice
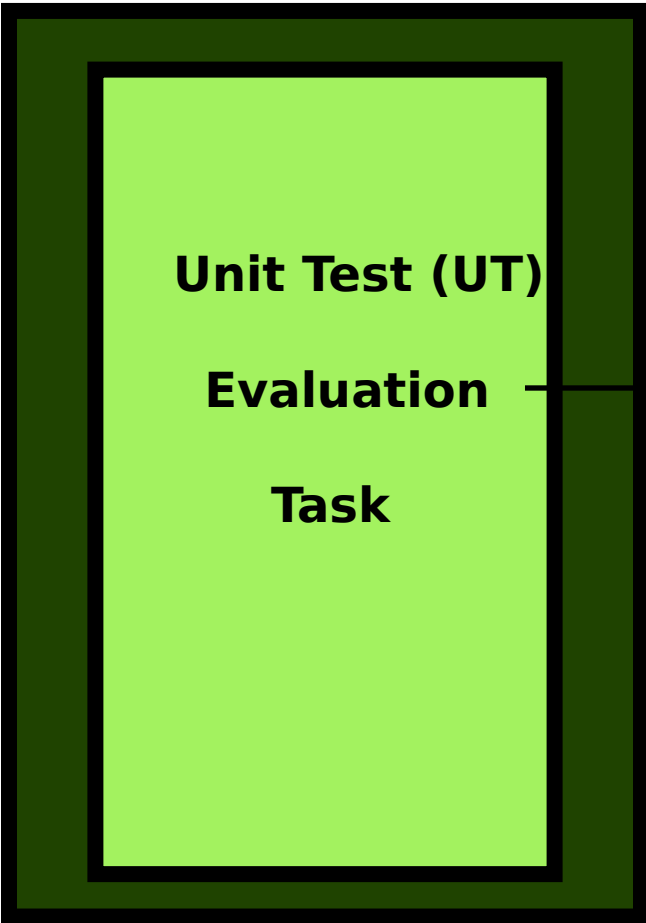
Test Results Certification

Skill(s):

Applications Systems Programming
Computer Specialist skilled in Library Mgt for a Particular OS
Computer Specialist skilled in Release Control for a Particular OS

Unit Test (UT) Evaluation Task

Unit Test (UT)

Evaluation

Task

1 SUBTASK

UT Computer Software

Unit (CSU) Check-In

Unit Test (UT) Evaluation Task

UT Computer Software Unit (CSU) Check-In
Subtask (1 of 1)

Procedures:

- **RM staff migrates CSU CIs from UT environment to SIT environment.**

Notes:

- **CMIS produces notification to the RM staff.**

- **If CMIS is not available, the notification must be done manually.**

SOFTWARE PROCESS ARCHITECTURE

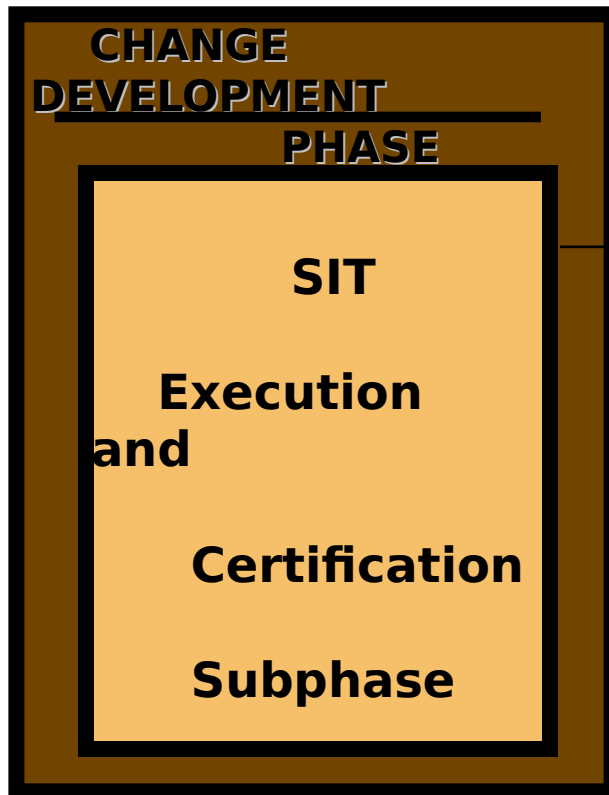## SYSTEM MODIFICATION SCENARIO - PHASES & SUBPHASES

CHANGE INITIATION

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CHANGE DEFINITION

| FUNCTIONAL REQ'MENTS DEFINITION |

CHANGE ANALYSIS

| ANALYSIS PREPARATION | REQUIREMENTS SPECIFICATION & IMPACT ANALYSIS |

CHANGE ANALYSIS (Contd.)

| DESIGN PREPARATION | SYSTEM/ SUBSYSTEM DESIGN | RESOURCE ESTIMATION |

CHANGE APPROVAL & PLANNING

| PROPOSED RELEASE PACKAGE DEVELOPMENT | RELEASE PLANNING ITSA PREP & ACCEPTANCE | RELEASE PLANNING | CCB REVIEW & APPROVAL | DEVELOPMENT ITSA PREP. & ACCEPTANCE |

CHANGE DEVELOPMENT

| Release Planning | SYSTEM DOCUMENTATION MODIFICATION | DETAILED SAT DEFINITION | DETAILED SQT DEFINITION | System/Subsystem Design & COMPUTER SOFTWARE UNIT SPECIFICATIONS DEVELOPMENT | DETAILED SIT DEFINITION | DETAILED UT DEFINITION | UNIT CODE & UNIT TEST(UT) |

CHANGE DEVELOPMENT (Contd.)

| SIT EXECUTION & CERTIFICATION | SQT EXECUTION & CERTIFICATION | SAT EXECUTION & CERTIFICATION |

CHANGE IMPLEMENTATION

| RELEASE IMPLEMEN- TATION | POST RELEASE IMPLEMEN- TATION |

Legend

| Software Engineer NON LEVEL 2 | Software Engineer & Customer NON-LEVEL 2 | Customer LEVEL 2 & NON-LEVEL 2 | Optional At This Point |

| Software Engineer LEVEL 2 | Software Engineer & Customer LEVEL 2 | Optional if already Performed |

Slide 124

1 TASK

CHANGE DEVELOPMENT PHASE

SIT

Execution and

Certification

Subphase

* SIT Baseline/Library Maintenance

* Information covered in this section also addresses the similar tasks occurring in the SQT and SAT Execution & Certification Subphases.

Reference (s) or Standard (s):

Mil Std 973 17 APR 92
ANSI/IEEE Guide STD 1042-1987
CMIS Procedure Guide
DFAS 8000.1-R, Chap. 9

Input (s):

CI Delivery Notice

Test Discrepancy Report (TDR)

Migrating Configuration Item

Software Development Plan

5.9.2 SIT Baseline/Library Maintenance Task

PURPOSE:

- **Coordinate the Software Integration Test (SIT) environment including libraries and the migration of CIs between libraries.**

- **Begin building the SQT environment by the Release Management staff using the certification as authorization.**

Output (s):

Acceptance or Rejection notice

SIT Baseline

Skill(s):

Computer Specialist skilled in Release Control for a particular OS
Computer Specialist skilled in Library Management for a particular OS
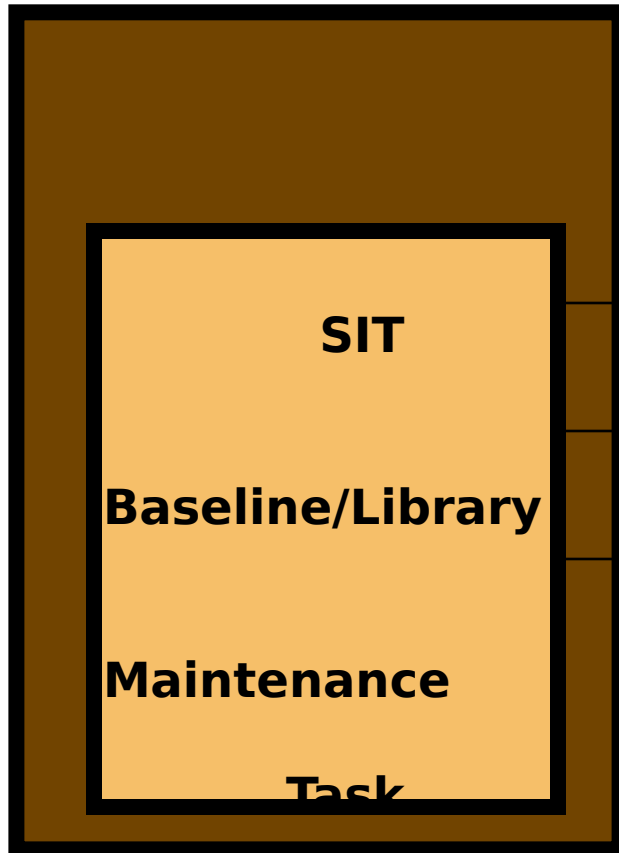
3 SUBTASKS

SIT

Baseline/Library

Maintenance

Task

SIT CI Receipt

SIT CI Verification

SIT CI Migration

Software Integration Test (SIT) Baseline/Library Maintenance Task
SIT CI Receipt
Subtask (1 of 3)

- **RM staff receives a notice to migrate CIs to the SIT environment.**

Procedures:

- – **SIT Release Management Notice Receipt**
- – **SIT Delivery Notice Receipt through CMIS**
- – **SIT Library Verification**
- – **SIT Rejection Notice**

Software Integration Test (SIT) Baseline/Library Maintenance Task

SIT CI Verification Subtask (2 of 3)

- **RM staff verifies the CIs prior to test environment migration.**

Procedure:

- **SIT Release Management Version Verification**

  – **Allows for alternative configuration**

  – **Uses Check-in and Check-out processes**

Software Integration Test (SIT) Baseline/Library Maintenance Task
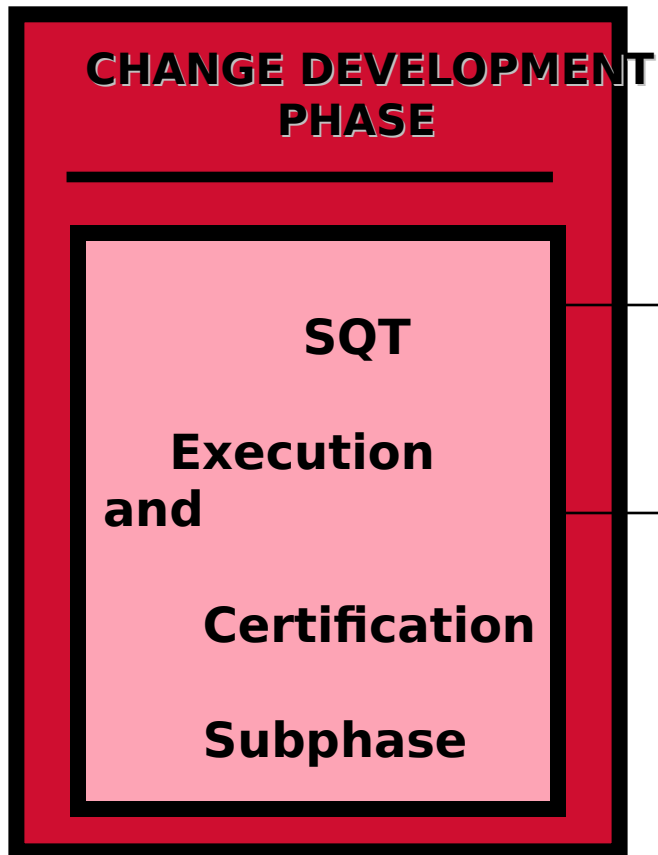## SIT CI Migration
Subtask (3 of 3)

- **RM staff controls migration of CIs to test environment**

Procedure:

- **SIT Release Control Library Management**

  – **Migrate CIs between libraries**

  – **Updates release baseline**

  – **Make CIs available for testing**

  – **Ensure updates test environment**

SOFTWARE PROCESS ARCHITECTURE

SYSTEM MODIFICATION SCENARIO - PHASES & SUBPHASES

CHANGE INITIATION

CHANGE/ PROBLEM DEFINITION	PROBLEM (PTR) DOCUMENTATION & DISPOSITION	CHANGE (SCR) INITIATION, REVIEW, APPROVAL, & RANKING

CHANGE DEFINITION

FUNCTIONAL REQ'MENTS DEFINITION

CHANGE ANALYSIS

ANALYSIS PREPARATION	REQUIREMENTS SPECIFICATION & IMPACT ANALYSIS

CHANGE ANALYSIS (Contd.)

DESIGN PREPARATION	SYSTEM/ SUBSYSTEM DESIGN	RESOURCE ESTIMATION

CHANGE APPROVAL & PLANNING

PROPOSED RELEASE PACKAGE DEVELOPMENT	RELEASE PLANNING ITSA PREP & ACCEPTANCE	RELEASE PLANNING	CCB REVIEW & APPROVAL	DEVELOPMENT ITSA PREP. & ACCEPTANCE

CHANGE DEVELOPMENT

Release Planning	SYSTEM DOCUMENTATION MODIFICATION	DETAILED SAT DEFINITION	DETAILED SQT DEFINITION	System/Subsystem Design & COMPUTER SOFTWARE UNIT SPECIFICATIONS DEVELOPMENT	DETAILED SIT DEFINITION	DETAILED UT DEFINITION	UNIT CODE & UNIT TEST(UT)

Legend

Software Engineer NON LEVEL 2	Software Engineer & Customer NON-LEVEL 2	Customer LEVEL 2 & NON-LEVEL 2	Optional At This Point

Software Engineer LEVEL 2	Software Engineer & Customer LEVEL 2		*Optional if already Performed*

CHANGE DEVELOPMENT (Contd.)

SIT EXECUTION & CERTIFICATION	SQT EXECUTION & CERTIFICATION	SAT EXECUTION & CERTIFICATION

CHANGE IMPLEMENTATION

RELEASE IMPLEMEN-TATION	POST RELEASE IMPLEMEN-TATION

2 TASKS

CHANGE DEVELOPMENT PHASE

SQT

Execution and

Certification

Subphase

* **SQT Baseline/Library Maintenance**

Relevant Release Documentation Implementation

* **Addressed in the SIT Execution & Certification Subphase**

Reference (s) or Standard (s):

Mil Std 973 17 APR 92
ANSI/IEEE Guide STD 1042-1987
CMIS Procedure Guide
DFAS 8000.1-R, Chap. 9

Input (s):

Release Implementation Plan

Software Development Plan

5.10.3   Relevant Release Documentation Implementation Task
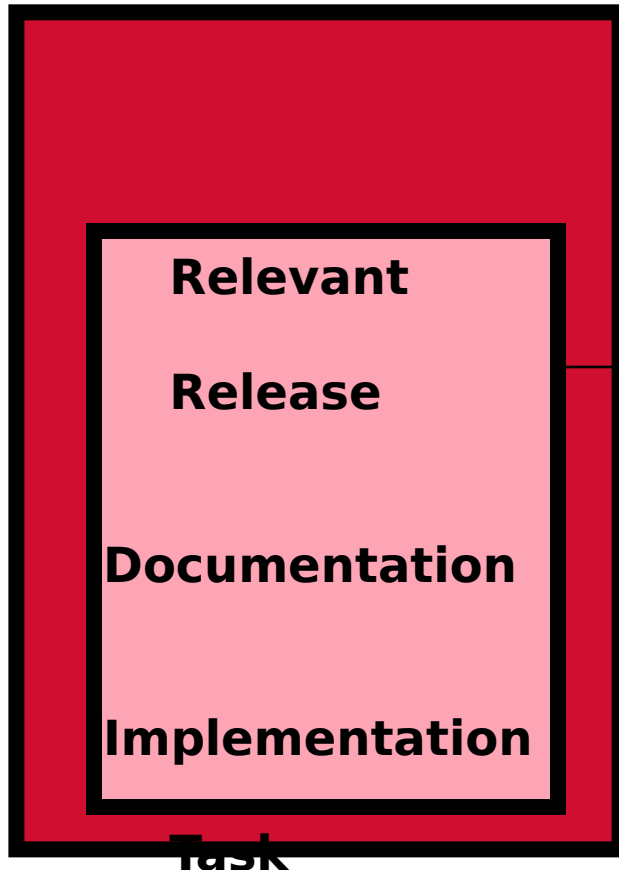
PURPOSE:

- **Assemble and distribute the documentation for a software release.**
- **Documentation includes guidance to install the change package .**
- **Implementation Guidance must be fully tested**

Output (s):

Implementation Guidance Output Procedures

Skill(s):
Computer Expertise

1 SUBTASK

Relevant

Release

Documentation

Implementation

Task

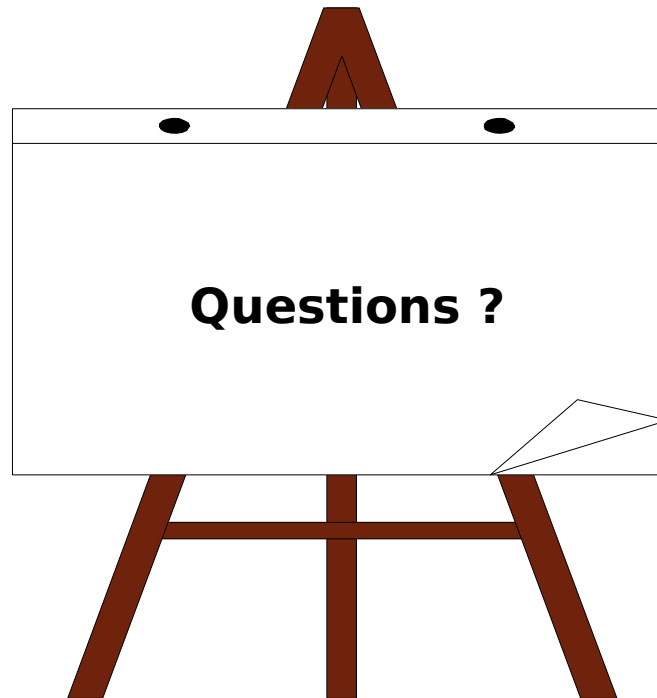**Release Documentation Preparation**

Relevant Release Documentation Implementation Task
Release Documentation Preparation Subtask (1 of 1)

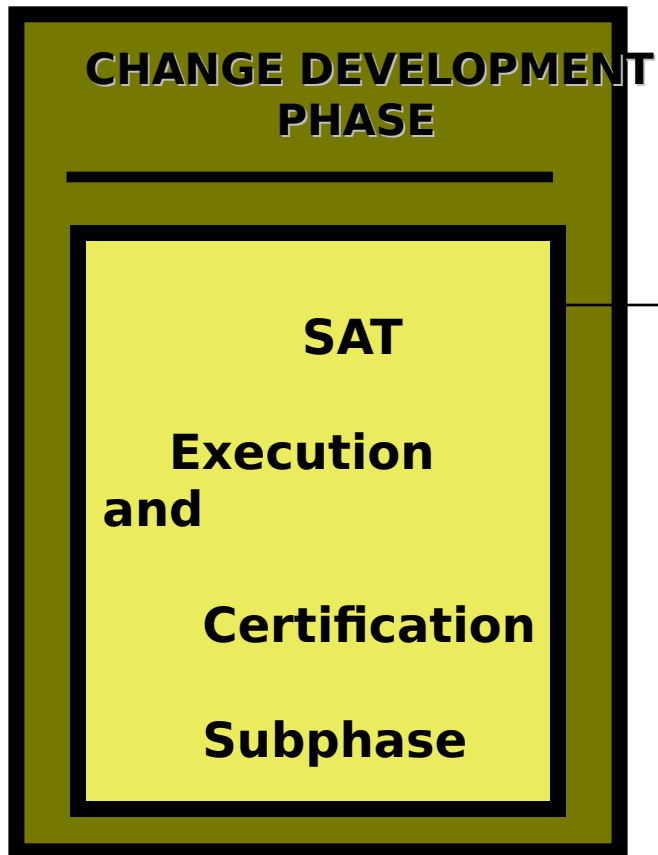- **CM reviews SDP and RIP for documentation requirements**

Procedures:

- – **Software Development Plan Review**
- – **Release Implementation Plan Review**
- – **Documentation Release Identification**
- – **Documentation Release Assembly**
- – **Release Implementation Guidance Creation**
- – **Release Implementation Guidance and Documentation Shipment**

Review

Questions ?

SOFTWARE PROCESS ARCHITECTURE

SYSTEM MODIFICATION SCENARIO - PHASES & SUBPHASES

CHANGE INITIATION

| CHANGE/ PROBLEM DEFINITION | PROBLEM (PTR) DOCUMENTATION & DISPOSITION | CHANGE (SCR) INITIATION, REVIEW, APPROVAL, & RANKING |

CHANGE DEFINITION

| FUNCTIONAL REQ'MENTS DEFINITION |

CHANGE ANALYSIS

| ANALYSIS PREPARATION | REQUIREMENTS SPECIFICATION & IMPACT ANALYSIS |

CHANGE ANALYSIS (Contd.)

| DESIGN PREPARATION | SYSTEM/ SUBSYSTEM DESIGN | RESOURCE ESTIMATION |

CHANGE APPROVAL & PLANNING

| PROPOSED RELEASE PACKAGE DEVELOPMENT | RELEASE PLANNING ITSA PREP & ACCEPTANCE | RELEASE PLANNING | CCB REVIEW & APPROVAL | DEVELOPMENT ITSA PREP. & ACCEPTANCE |

CHANGE DEVELOPMENT

| Release Planning | SYSTEM DOCUMENTATION MODIFICATION | DETAILED SAT DEFINITION | DETAILED SQT DEFINITION | System/Subsystem Design & COMPUTER SOFTWARE UNIT SPECIFICATIONS DEVELOPMENT | DETAILED SIT DEFINITION | DETAILED UT DEFINITION | UNIT CODE & UNIT TEST(UT) |

Legend

| Software Engineer NON LEVEL 2 | Software Engineer & Customer NON LEVEL 2 | Customer LEVEL 2 & NON-LEVEL 2 | Optional At This Point |

| Software Engineer LEVEL 2 | Software Engineer & Customer LEVEL 2 | Optional if already Performed |

CHANGE DEVELOPMENT (Contd.)

| SIT EXECUTION & CERTIFICATION | SQT EXECUTION & CERTIFICATION | SAT EXECUTION & CERTIFICATION |

CHANGE IMPLEMENTATION

| RELEASE IMPLEMEN- TATION | POST RELEASE IMPLEMEN- TATION |

1 TASK

CHANGE DEVELOPMENT PHASE

SAT

Execution and

Certification

Subphase

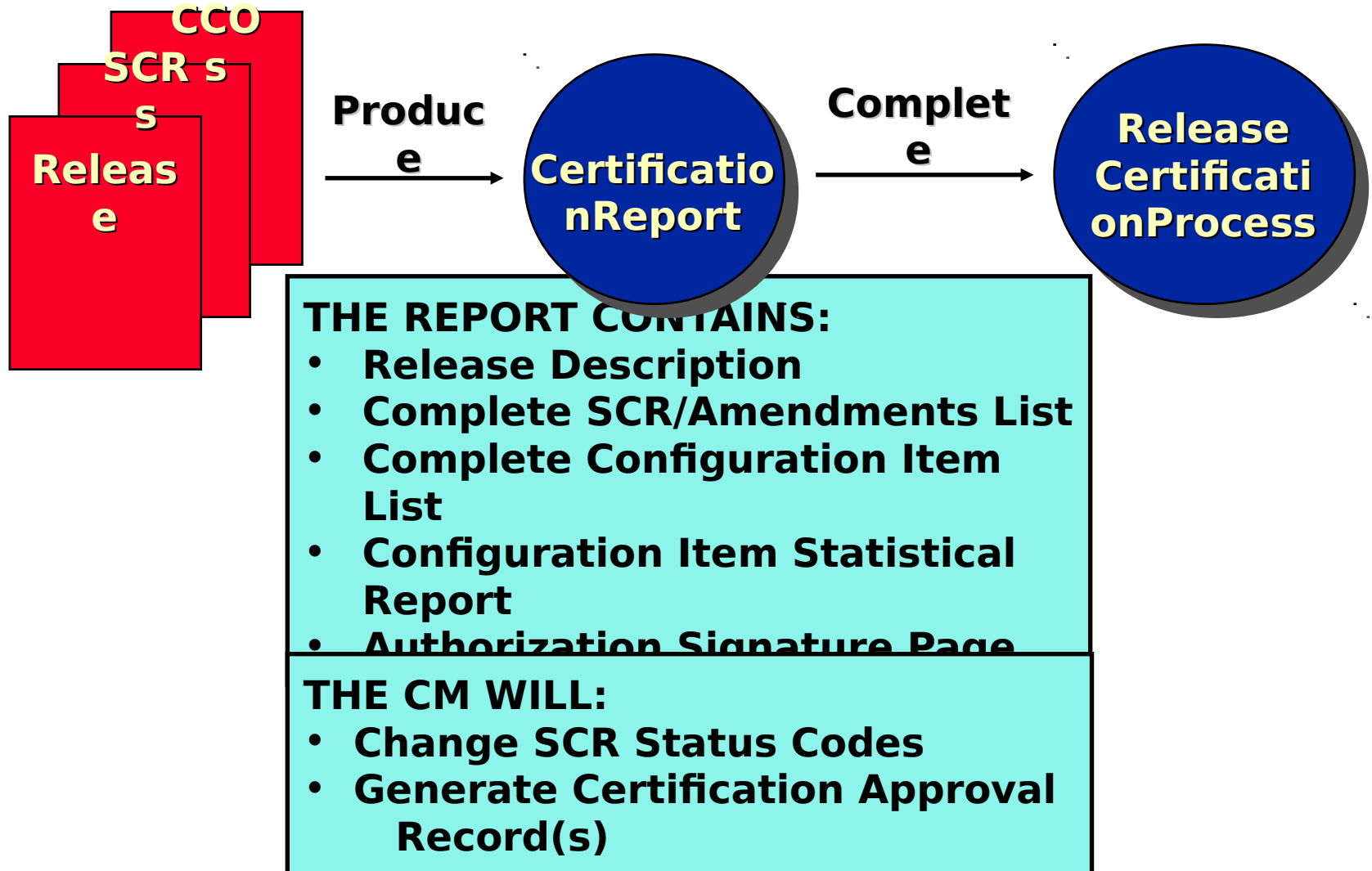*** SAT Baseline/Library Maintenance**

* Addressed in the SIT Execution & Certification Subphase

Release Certification Process

CCO

SCR s

s

Release

Produce →

Certification Report

Complete →

Release Certification Process

THE REPORT CONTAINS:
- **Release Description**
- **Complete SCR/Amendments List**
- **Complete Configuration Item List**
- **Configuration Item Statistical Report**
- **Authorization Signature Page**

THE CM WILL:
- **Change SCR Status Codes**
- **Generate Certification Approval Record(s)**

SOFTWARE PROCESS ARCHITECTURE

SYSTEM MODIFICATION SCENARIO - PHASES & SUBPHASES

CHANGE INITIATION

CHANGE/ PROBLEM DEFINITION	PROBLEM (PTR) DOCUMENTATION & DISPOSITION	CHANGE (SCR) INITIATION, REVIEW, APPROVAL, & RANKING

CHANGE DEFINITION

FUNCTIONAL REQ'MENTS DEFINITION

CHANGE ANALYSIS

ANALYSIS PREPARATION	REQUIREMENTS SPECIFICATION & IMPACT ANALYSIS

CHANGE ANALYSIS (Contd.)

DESIGN PREPARATION	SYSTEM/ SUBSYSTEM DESIGN	RESOURCE ESTIMATION

CHANGE APPROVAL & PLANNING

PROPOSED RELEASE PACKAGE DEVELOPMENT	RELEASE PLANNING ITSA PREP & ACCEPTANCE	RELEASE PLANNING	CCB REVIEW & APPROVAL	DEVELOPMENT ITSA PREP. & ACCEPTANCE

CHANGE DEVELOPMENT

Release Planning	SYSTEM DOCUMENTATION MODIFICATION	DETAILED SAT DEFINITION	DETAILED SQT DEFINITION	System/Subsystem Design & COMPUTER SOFTWARE UNIT SPECIFICATIONS DEVELOPMENT	DETAILED SIT DEFINITION	DETAILED UT DEFINITION	UNIT CODE & UNIT TEST(UT)

Legend

Software Engineer NON LEVEL 2	Software Engineer & Customer NON LEVEL 2	Customer LEVEL 2 & NON-LEVEL 2	Optional At This Point

Software Engineer LEVEL 2	Software Engineer & Customer LEVEL 2	Optional if already Performed

CHANGE DEVELOPMENT (Contd.)

SIT EXECUTION & CERTIFICATION	SQT EXECUTION & CERTIFICATION	SAT EXECUTION & CERTIFICATION

CHANGE IMPLEMENTATION

RELEASE IMPLEMEN- TATION	POST RELEASE IMPLEMEN- TATION

3 TASKS

IMPLEMENTATION PHASE

Release Implementation Subphase

Release Implementation Plan Finalization

Non-Software Configuration Item Distribution

Release Package Implementation

Standard (s):

Mil Std 973 17 APR 92
ANSI/IEEE Guide STD 1042-1987
DFAS 8000.1-R, Chap. 9

Input (s):

Implementation Guidance Output Procedures

Release Implementation Plan

Software Development Plan

Software Implementation Plan

Output (s):

6.1.2   **Release Implementation Plan Finalization Task**

PURPOSE:
- **Finalize each task required for installation.**
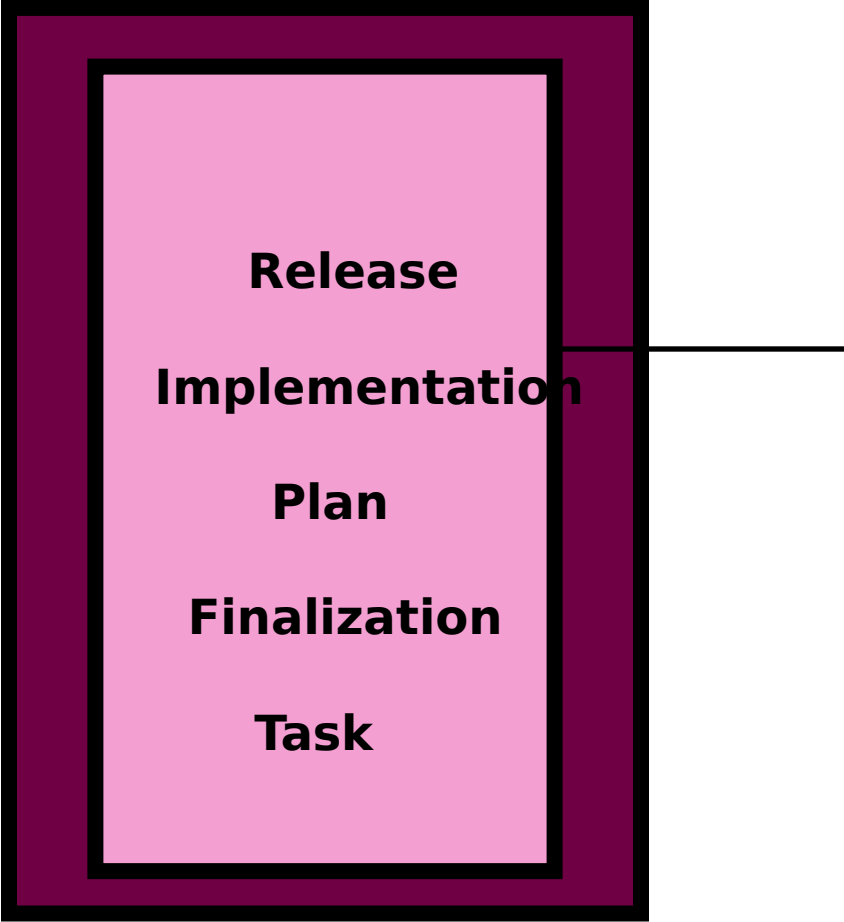- **Identify the organization responsible for accomplishing each task.**

Approved Release Implementation Plan

Skill(s):

Computer Expertise

1
~~SUBTASK~~

Release

Implementation

Plan

Finalization

Task

Release Implementation
Plan Review

Release Implementation Plan Finalization Task
Release Implementation Plan Review Subtask (1 of 1)

- **CM reviews RIP, finalizes implementation tasks and schedules, obtains release authorization, and documents final approval.**

Procedures:

- **Implementation Plan Review**

- **Implementation Tasks Finalized**

- **Implementation Schedule Finalized**

- **System Implementation Authorized**

- **Authorizing Personnel Confirmation**

- **Authorization**

- **Pre-Implementation Message Developed**

- **Release Verification and Approval**

Standard (s):

TBD

Input (s):

TBD

6.1.6   **Non-Software Configuration Distribution Task**

PURPOSE:
- **Distribute the release notification letter and the functional/technical guidance necessary for advance information or planning related to a release**
- **This task to be further defined at a later time**

Output (s):

TBD

Skill(s):

TBD

Reference (s) or Standard (s):

Mil Std 973, APR 92
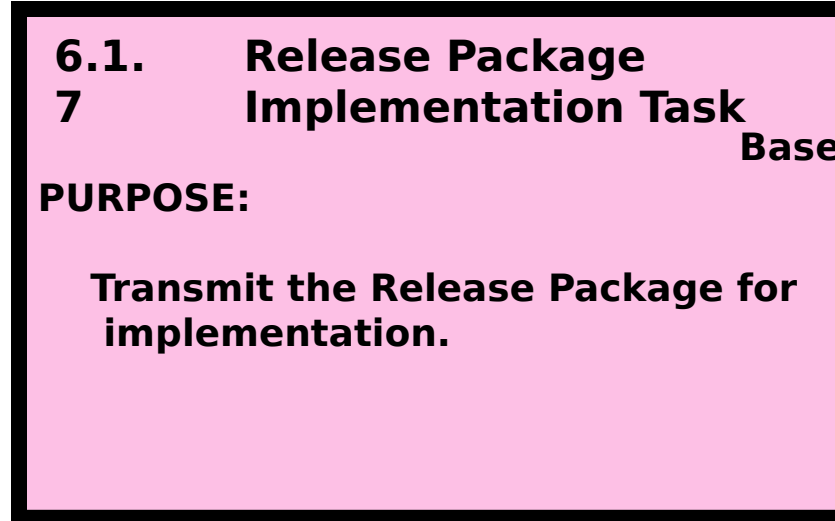**ANSI/IEEE Guide STD 1042-1987**
CMIS Procedure Guide
DFAS 7920.3-R, Chap. 9

Input (s):

Implementation Guidance Procedures

Software Development Plan

Output (s):

Production

Software Implementation Plan

6.1.7   Release Package Implementation Task

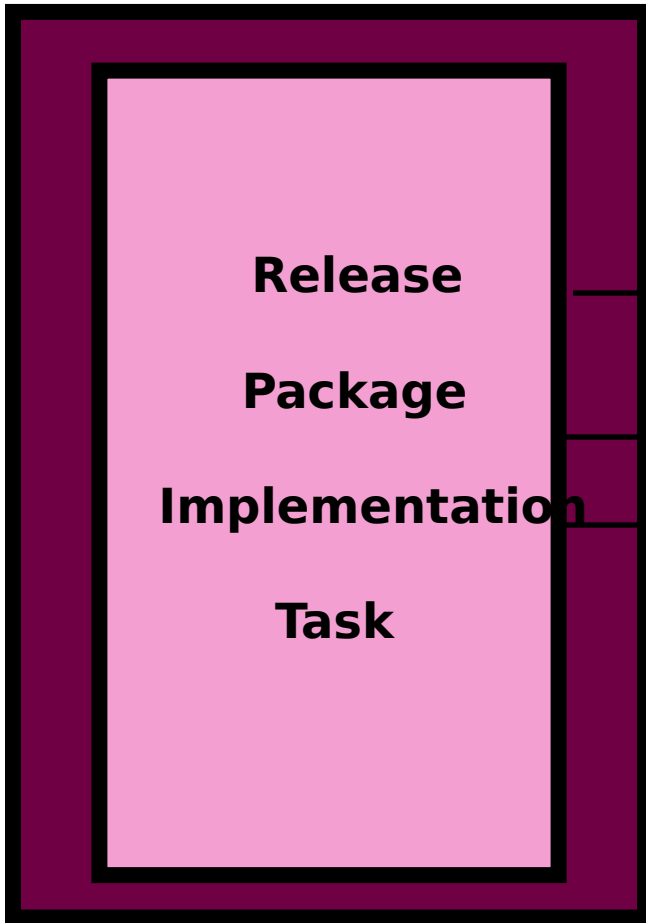**Baseline**

PURPOSE:

  Transmit the Release Package for implementation.

Skill(s):

Computer Specialist skilled in Library Mgt for a Particular OS
Computer Specialist skilled in Release Control for a Particular OS

3 SUBTASKS

Release

Package

Implementation

Task

Release Package Configuration Item Assembly

Release Package Transmit

Release Package Implementation Verification

Release Package Implementation Task

Release Package Configuration Item Assembly
Subtask (1 of 3)

- **RM ensures release package content after SQT and SAT certifications.**

- **CIs migrate to production environment.**

Procedures:

- – **Assemble Release Configuration Items**

- – **Verify Release Configuration Items**

- – **Build Configuration Items into Release Package**

Release Package Implementation Task

Release Package Transmit Subtask (2 of 3)

- **Transmit Release to the DMC**

Procedures:

- – **Release Mainframes/Mini-processors**
- – **Release Microprocessors/Local Area Network (LAN)**
- – **Release PC**

Release Package Implementation Task

Release Package Implementation Verification
Subtask (3 of 3)

- **RM includes verification and approvals in the Release Package and indicates final approval.**

Procedure:

- **Verification of a successful release**

Review

Questions ?